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H. BROOKES

ASSISTANT EDITOR

1

Extraction with supercritical gases in coupling with thin-layer chromatography. I. Instrumentation, operation, applications.
Stahl, E.; Schilz, W.
Zeitschrift für Analytische Chemie **280** (3) 99-104 (1976) [17 ref. En, de] [Pharmakognosie & Analytische Phytochemie, Univ., D-6600 Saarbrücken 15, Federal Republic of Germany]

Numerous substances can be extracted from samples by supercritical gases, e.g. CO_2 or N_2O in fluid state at 40°C and 70-400 bar pressure. An apparatus for such solvent free extraction, coupled directly with a receiving apparatus for subsequent TLC is described. Its possibilities and advantages are illustrated by 3 examples with corresponding chromatograms: from raw coffee, caffeine was extractable at 80 bar, and lipophilic components at >90 bar. At 180-200 bar the zones corresponding to coffee oils are so large that they are no longer sharply defined. RM

2

Hesser's papercan is easy and economical.
Bosch, R.
Tea and Coffee Trade Journal **148** (4) 28-29 (1976) [En]

The new Hesser vacuum-package type Papercan for coffee is described. It consists of an outer carton with tear-open perforation and a heat-sealable inner bag with a tear-open strip and a cardboard sleeve; a reclosable lid that locks into place is incorporated. The carboard sleeve is heat sealed to the box and extends above the product level, preventing spillage on opening. The Hesser packaging line can produce 90 packages/min, has a low noise level and can be used for other sensitive products (O_2-sensitive products, with or without vacuum and/or inert gas flushing). RM

3

Carbohydrates of different components of ripe fruits in coffee. [Lecture]
Gopal, N. H.; Raju, K. I.; Janardhan, K. V.
Indian Coffee **40** (4/5) 114-117 (1976) [10 ref. En] [Cent. Coffee Res. Inst., Coffee Res. Sta. 577 117, Chikmagalur District, Karnataka, India]

Reducing, non-reducing and total sugars and starch contents were determined in fruit wall (pulp), mucilage and seed of fully-ripe fruits of Coffea arabica (var. Kents, S.795 and S.1934), C. canephora Pierre var. 274 (robusta) and C. dewevrei var. excelsa (tree coffee). Tabulated results showed that all 5 types contained significantly more total sugars in mucilage than in fruit wall and seed, and significantly more starch in seed than in fruit wall and mucilage (except Kents). C. arabica S.795 and S.1934 contained significantly more total carbohydrates that the other var. (36.04 and 20-26% on DM in fruit wall, 44.88 and 46.58% in mucilage). The possible use of coffee by-products, i.e. pulp and pulp water (which contains mucilage), for animal nutrition is suggested. RM

4

[New findings on the quantitative determination of carboxylic acid-5-hydroxytryptamide in coffee.] Neue Erkenntnisse zur quantitativen Bestimmung der Carbonsäure-5-hydroxy-tryptamide in Kaffee. [Lecture]
Kummer, P.; Bürgin, E.
Mitteilungen aus dem Gebiete der Lebensmitteluntersuchung und Hygiene **67** (2) 212-225 (1976) [5 ref. De, fr] [Lab. der Coffex AG, Schaffhausen, Switzerland]

Several versions were tested of the method for detn. of carboxylic acid-5-hydroxytryptamide (CHT) in coffee based on TLC and visualization with dichloroquinone chloroimide (Gibbs's reagent) [see FSTA (1969) **1** 2H202], including that recommended in 1972 by Firma Hag, Bremen, Federal Republic of Germany, and the procedure based on it suggested in 1973 by the Swiss Federal Health Office (EGA). In addition, 2 new methods involving respectively UV spectroscopy, and measurement of absorption at >595 nm using a suitable equipment directly on the TLC plate (DA) are described in detail. Results of detn. by the Hag, UV, and DA methods of CHT contents of Tanzania, Robusta C.J., Haiti, Santos, Ecuador and Columbia coffees, and of coffee mixtures are tabulated. Results of the UV and DA methods were in good agreement; values by the Hag method were higher. SKK

5

[Suitability of refractometric and conductometric methods for determination of the extract content of coffee infusions.] Brauchbarkeit der refraktometrischen und konduktometrischen Methoden zur Bestimmung des Extrakts von Bohnenkaffeeaufgüssen.
Czechowska, M.; Golebiowski, T.; Piezonka, W.; Solarz, A.
Lebensmittel-Industrie **23** (6) 258-260 (1976) [13 ref. De, en, ru] [Ökonomische Akad., Inst. für Warenkunde, Krakow, Poland]

The extract content of coffee infusions was determined by (i) drying at 105°C for 4 h; (ii) measurement of the refractive index at 20°C; and (iii) electrical conductivity measurements. Tables of results are given, together with correlation coeff. and regressions relating results determined by (i) to those determined by (ii) and (iii). The correlation coeff. between (i) and (ii) and between (i) and (iii) were +0.967 and +0.937, respectively. Both (ii) and (iii) are much quicker than (i) and are suitable for routine quality control. IN

6

Solution, dispersion, emulsion? Coffee can be all of these.
Lee, H.
Tea and Coffee Trade Journal **148** (5) 6, 10 (1976) [En]

The characteristics of coffee drunk as a solution, dispersion and emulsion are discussed. Each has a distinct flavour even when prepared from the same blend. Clear solution is obtained only from highly

clarified instant coffee or by using a fine paper filter; a hazy or cloudy cup containing oils is classified as an emulsion and one containing insolubles (from a fraction of 1% of coffee fines to Turkish coffee containing a heavy sludge of powder) as a dispersion. RM

7

Niacin activity in niacin amide and coffee.
Baker, D. H.; Yen, J. T.; Jensen, A. H.; Teeter, R. G.; Michel, E. N.; Burns, J. H.
Nutrition Reports International **14** (1) 115-120 (1976) [14 ref. En] [Dep. of Anim. Sci., Univ. of Illinois, Urbana, Illinois 61801, USA]

Chick assays were conducted to evaluate niacin activity of niacinamide and of decaffeinated freeze-dried instant coffee; niacin activity of the instant coffee was found to be 70 ppm. AJDW

8

[Study of defective coffee beans.]
Barel, M.; Challot, F.; Vincent, J.-C.;
Cafe-Cacao-The **20** (2) 129-134 (1976) [5 ref. Fr, en, de, es] [Lab. de Chimie-Tech., IFCC, Montpellier, France]

Sampling of coffee beans on Cameroon plantations revealed that 78.9% of samples contained 1 stinker bean/300 g and 1-50 stinkers/2000 beans (0.05-2.5%). Cherry samples from the same plantations were treated by the growers themselves, or in the laboratory. Results showed that careful treatment prevented the production of stinker beans. A laboratory study revealed the effect of temp. on the appearance of the stinker bean defect which might follow the death of the embryo through rise in temp. during cherry storage: stinker beans were found when cherries were heated for 24 h at 55°C or 48 h at 45°C, especially after long fermentation (4 days). Comparison of volatile compounds from healthy and stinker beans by extraction of aromas under vacuum with grinding and MS-GLC revealed increases in the methanol and ethanol peaks and a change of their ratio, increases in acetoin and acetic acid and the presence of butane-2,3-dione (diacetyl) and butane-2-diol, as well as butane, butanol, isobutanol, pentane-3-one and pentane-2,3-dione. RM

9

Coffee agglomeration.
Hansen, K. E.; Hansen, O. (AS Niro Atomizer)
United States Patent 3 966 975 (1976) [En]

Powdered coffee materials are moistened as they drop toward a disc which is rotating with sufficient speed to cause the moistened material to be thrown off by centrifugal force. IFT

10

Freeze-dried coffee extract.
Katz, S. N.; Dwyer, D. E., Jr. (General Foods Corp.)
United States Patent 3 966 979 (1976) [En]

Layers of a liquid coffee extract are continuously applied to a freezing surface. The upper portion of the previous layer melts and the extract is completely frozen, comminuted and freeze-dried to a stable moisture content. IFT

11

Beverage infusion device.
Rodrigues-Ely
British Patent 1 436 397 (1976) [En]

A beverage infuser for tea or coffee comprises a float sized to cover most of the liquid surface in a cup, secured to 1 side of which is a foraminous bag containing the infusible material. IFT

12

On quality of coffée in Andrah Pradesh.
Balasubramanian, M. A.; Ramabhadriah, B. R.
Indian Coffee **40** (1) 16-20 (1976) [En] [Coffee Plantation Project (Forest Dep.), Gov. of Andrah Pradesh, Visakhapatnam, India]

In a study of Andrah Pradesh coffee quality beginning in 1966-1967, improvements were obtained from 1969-1970 onwards. 86% of total plantation and 66% of total crop were rated above the FAQ (fair average quality) points in 1972-1973 cup-tasting, and 80% of total crop and 96% of total plantation earned 0.5-3% bonus points in 1973-197 cup-tasting. RM

13

Some physical aspects of Brazilian green coffee beans and the quality of the beverage.
Amorim, H. V.; Smucker, R.; Pfister, R.
Turrialba **26** (1) 24-27 (1976) [13 ref. En, pt] [Dep. of Chem., Escola Superior de Agric. 'Luiz de Queiroz', Univ. of Sao Paulo, 13400 Piracicaba, Sao Paulo, Brazil]

Green coffee samples, classified as soft (mild taste) and Rio (phenolic or medicinal taste) with respect to the quality of the beverages, were subjected to microscopic analysis. Electron scanning microscopy and light microscopy of sections were used to compare the 2 types of coffee. Rio coffee was shown to have a lower density, thinner cell walls and lower cell wall:cytosol vol. ratio. These differences were attributed to cell wall degradation due to bad conditions of harvesting, processing and/or storage. The products of cell wall degradation may play at least a part in the production of the Rio flavour type. AS

14

Coffee enzymes and coffee quality.
Amorim, H. V.
Abstracts of Papers, American Chemical Society **172**, AGFD 6 (1976) [En] [Dep. of Chem., Univ. of Sao Paulo, 13400 Piracicaba, Sao Paulo, Brazil]

Poor harvesting and storage conditions affect the activity of several coffee enzymes: polyphenol oxidase, peroxidase, glycosidases, lipases and proteases. The activity of polyphenol oxidase and peroxidases with age. More free fatty acids are found in spoiled coffee. Fewer soluble proteins, fewer high mol. wt. proteins and more low mol. wt. proteins are found in spoiled coffee than in good quality coffee. AS

15

Soluble coffee product.
Donnelly, J. G.; Livingston, G. E. General Foods Corp.
United States Patent 3 969 533 (1976) [En]

An extract of roasted ground coffee is agitated within a storage vessel by recirculation through a submerged eductor to prevent coalescing of insoluble material. IFT

16

Alcohol from coffee waste.
Bhat, P. K.; Singh, M. B. D.
Journal of Coffee Research **5** (3/4) 71-72 (1975) [7 ref. En] [Div. of Entomology/Nematology, Cent. Coffee Res. Inst., Coffee Res. Sta. 577 117, Karnataka, India]

The sugar content of coffee pulp and mucilage respectively was found to be 9.0-9.5% and 3-4% on fresh wt. basis, or 35% and 41% on oven-dry wt. basis. Freshly pulped coffee beans with mucilage and skin were mixed with 1 l. water/kg pulped fruit, the mucilage allowed to break down for 24 h and then filtered to remove pulp and solids. The filtrate was sterilized, cooled, inoculated with Saccharomyces cerevisiae and incubated at 28°C. After 1 wk, a 100 ml aliquot was distilled, and detn. were made for the sp. gr. and % alcohol of the distillate and of the residual sugar. Utilization of sugar present was 85%; only 3-4% alcohol was obtained. The process is considered to be uneconomic in view of the additional steam which would be required to distill a brandy and the costs and difficulties of collecting and transporting wastes from numerous estates to a central point for alcohol extraction. ELC

17

Commercial coffee bean drying in eight hours.
Sivetz, M.
Tea and Coffee Trade Journal **148** (7) 38, 40-41 (1976) [En]

The Shivvers coffee bean drying process is briefly described. Its rotating radial helical transporter continually sweeps the driest beans from the bottom of the silo and pushes them to the centre lift for spreading on top of the batch; a mixing action both at the top and the bottom eliminates local overheating. Coffee beans at 53% moisture are dried to 13.5% moisture in 8 h with inlet air temp. 170°F and bean temp. of <100°F at all depths. A drier handling 12 t wet beans 80 cm deep in a 15 ft diam. silo consumed about 8 gal/h diesel oil to heat air flowing at 15 000 ft^3/min and produced no trace of combustion odours. Dried cherry coffee beans had the taste of properly aged beans but a heavier body. RM

18

[Method for reducing the carboxylic acid-5-hydroxy-tryptamide content of green coffee beans.]
Verfahren zur Herabsetzung des Carbonsäure-5-hydroxy-tryptamid-Gehaltes von ungerösteten Kaffeebohnen.
Buergin, E. Coffex AG
Swiss Patent 576 749 (1976) [De]

The carboxylic acid-5-hydroxytryptamide content of coffee beans is lowered by treating the surface of green coffee beans with an oxidizing agent, preferably with ozonized air during or after a steam treatment, while the decomposition products of the waxy outer layer are at the same time mechanically removed. W&Co

19

[Effect of heating conditions on removal of moisture from coffee extracts during freeze-drying.]
Colombo, A. J.; Aquarone, E.; Baruffaldi, R.
Industrie delle Bevande **5** (4) 100-109 (1976) [10 ref. It, en]

Samples of an industrially-prepared extract and an extract prepared by the filter method were used in a study on the effects of initial extract concn. (8°, 12° or 16°Brix) and final dried product temp. (30°, 60° or 90°C) on the rate of moisture removal during freeze-drying. Tables and graphs of results are given. In all samples, approx. 50% of the water was removed during the first 4 h of drying; after this, water removal rate increased with increasing final product temp. The initial Brix value had relatively little effect on the water removal characteristics of the extracts. AJDW

20

Improvements in or relating to extraction treatment of vegetable material.
General Foods Ltd.
British Patent 1 440 433 (1976) [En]

Water is introduced into the most spent column of a battery packed with roasted ground coffee, after which the extract is passed successively through the columns and withdrawn intermittently from the last spent column. IFT

21

[Process and device for decaffeinating coffee.] Verfahren und Vorrichtung zum Entkoffeinieren von Kaffee.
Dallinga, H.
German Federal Republic Patent Application 2 450 978 (1976) [De]

In a process for decaffeinating coffee in the form of beans, raw coffee or roasted coffee, by mixing it with a solvent for the caffeine and subjecting the mixture to the effects of temp. and pressure, a predetermined pressure is established in the vessel containing the mixture to a min. value which is greater than the vapour pressure of the solvent at the highest temp. obtaining in the vessel. By preventing boiling of the solvent, loss of valuable coffee extract substances is prevented. W&Co

22

[The caffeine content of coffee products.] Zum Koffeingehalt in Kaffeeprodukten.
Wolper [Volper], I. N.; Solowjewa, T. Ja. [Solov'eva, T. Ya.]
Lebensmittel-Industrie **23** (6) 257-258 (1976) [De, en, ru] [Lehrstuhl für Lebensmittelwarenkunde, Leningrad Inst. für Sowjethandel, USSR]

The caffeine content of coffee beans and instant coffee is discussed; green coffee contains 1-2.2% caffeine, robusta coffees having the highest concn. Instant coffees generally contain 3.5-5.1% (exceptionally 7.16%) caffeine. A cup of coffee contains approx. 0.19 g caffeine. These results are discussed in relation to the pharmacological dose of caffeine (0.05-0.1 g). It is suggested that the use of robusta coffees for instant coffee manufacture should be reduced, and that standards for the max. caffeine content of coffee should be introduced. A spectrophotometric method for detn. of caffeine in coffee (based on extinction measurements at 250-290 nm) is described; agreement with a standard method was acceptable. IN

23

Advances in agglomeration of instant coffee.
Sivetz, M.
Tea and Coffee Trade Journal **148** (8) 24-25 (1976) [En]

A description is given of the Niro atomizer [US Patent 3 966 975, see FSTA (1977) **9** 1H163] a new technique for handling the hygroscopic and thermoplastic properties of instant coffee. It features a rotating disc on to which coffee powder falls immediately after moistening, the flow and distribution of the powder plus water and steam being accurately controlled for optimum moistening, and the temp. and flow rate of the warm air in the agglomeration chamber creating a favourable environment. Agglomerates formed on the rotating disc pass to a vibro fluidizer (vibrated fluid bed) for combined drying and cooling. Capital investment is relatively low and product losses minimal. 150 kg/h can be produced by a single operator. RM

24

Flavoring agent.
Winter, M.; Goldman, I. M.; Gautschi, F.; Flament, I.; Stoll, M.
United States Patent 3 943 260 (1976) [En]

Soluble coffee compositions containing flavour-modifying amounts of an R substituted thiophane, where R is hydrogen, methyl or ethyl, e.g. thiophane-3-one and 2-methyl-thiophane-3-one, are used in coffee, beverages and foods. IFT

25

Flavoring agent.
Winter, M.; Gautschi, F.; Flament, I.; Stoll, M.
Firmenich & Cie
United States Patent 3 931 245 (1976) [En]

A substituted furan sulphur compound, the chain having the formula $-(CH_2)_n-S-CO-R$, in which R may be one of 6 alkyl radicals combined with n = 1, or R is methyl and n is 2, is used as a flavour modifier or enhancer in coffee beverages made from soluble coffee. ELC

26

Food additives. Ethoxylated mono- and diglycerides.
United States of America, Food & Drug Administration
Federal Register **41** (178, Sept. 13) 38767-38768 (1976) [En] [Washington, DC, USA]

"Ethoxylated mono- and diglycerides" is recognized as the common name under the Federal Food, Drug, and Cosmetic Act for polyoxyethylene mono- and diglycerides of fatty acids (polyglycerate). This emulsifier may be used in all physical forms (dry, frozen, and liquid) of vegetable fat-water emulsions used as cream substitutes in beverage coffee rather than merely solids. CAS

27

[Determination of trace amounts of Hg in selected foods by neutron activation analysis.] Bestimmung von Quecksilberspurenmengen in ausgewählten Lebensmitteln mit der Neutronenaktivationsanalyse.
Jiranek, V.; Bludovsky, R.
Collection of Czechoslovak Chemical Communications **41** (9) 2690-2695 (1976) [6 ref. De] [Forschungsinst. der Lebensmittelind., 150 38 Prague 5, Czechoslovakia]

A substoichiometric method for detn. of traces of Hg in dried milk, flour, coffee, tea and rice by neutron activation analysis was developed. Results were compared with photometric detn. with dithizone. The Hg loss during wet digestion of samples by 4 digestion methods was also examined. After thermal neutron irradiation and addition of Hg-carrier ($Hg(NO_3)_2$), samples were subjected to wet digestion with a mixture of H_2SO_4 + $HClO_4$ + HNO_3, the digest dilution with a substoichiometric

amount of dithizone and extracted into chloroform. The activity of ^{197}Hg in the organic phase was measured by means of an NaI (TL) crystal. The limit of detn. was 0.003 µg Hg, with mean accuracy of 15% (relative SD 12-22%). Results of photometric detn. were 14-33% lower and less reproducible [numerical data not given for the photometric analyses]. RM

28

[Attitudes toward coffee and coffee packs. Results of a representative user enquiry.] Einstellungen zu Kaffee und Kaffeeverpackungen in der Bevölkerung. Ergebnisse einer repräsentativen Verbraucherumfrage.
Bräuer, P. F.
Kaffee und Tee Markt **26** (10) 3-4, 6-8 (1976) [De] [AFS-Arbeitsgemeinschaft für Sozialforschung, Hamburg, Federal Republic of Germany]

A consumer attitude survey was undertaken among 1002 coffee-drinkers during the 3rd quarter of 1975 by a commercial firm to determine their opinions of coffee and coffee drinking and in particular their preferences for alternative forms of packaging for coffee beans, viz. cans, vacuum-packs (plastics pouches) and paper bags. The results were used to evaluate the influence of both price and quality on purchasing habits and to devise marketing profiles for consumers of coffee in each of the forms examined. Overall, the can is considered to have the greatest sales potential from the firms' point of view. BDH

29

Better coffee farming.
Anon.
Kenya Coffee **41** (485) 271-275 (1976) [En]

Recommendations are made on successful coffee processing and storage, including sections on cherry selection and sorting; cherry inspection; pulping, prewashing and pregrading; detailed coffee processing procedure: feeding the cherry into the pulper and pulping; faults or symptoms on disc pulpers and possible causes and remedies (tabulated); and engine operating instructions. RM

30

Coffee aromatization.
Mahlmann, J. P. General Foods Corp.
United States Patent 3 979 528 (1976) [En]

Coffee aroma-containing gas in condensed as a frost with a high CO_2 content. The frost is placed in a pressure vessel with a liquid glyceride and the temp. and pressure increased to form a liquid CO_2 phase. The aromatized glyceride is then combined with coffee solids. IFT

31

[The origin of 'stinker' beans in Coffea arabica.]
Challot, F.
Cafe-Cacao-The **20** (3) 201-208 (1976) [5 ref. Fr, de, en, es] [IFCC, ONAREST, Yaounde, Cameroon]

Investigations on the origin of 'stinker' beans revealed that during 6 days' storage of coffee berries in jute bags, stinker beans appeared at temp. >41.5°C. In laboratory tests, coffee berries were stored 6 days at 45°, 25° and -5°C, depulped, and parchment coffee subjected to fermentation for 1-5 days. All the beans stored at 45° and -5°C were stinkers, though at -5°C the beans were not typical stinkers, being frequently more green than chestnut coloured. Germination tests showed that all the berries kept at these extreme temp. were dead, which allowed the development of enzyme reactions. Samples kept at 25°C contained limited number of stinkers which were not influenced by the length of parchment fermentation. These results were confirmed by laboratory tests on single coffee berries. RM

32

[Determination of the chicory content in soluble mixtures of coffee and chicory.]
Promayon, J.; Barel, M.; Fourny, G.; Vincent, J.-C.
Cafe-Cacao-The **20** (3) 209-218 (1976) [7 ref. Fr, de, en, es] [IFCC, Montpelier, France]

Methods for detection and detn. of chicory in soluble coffee mixtures are described. An enzymic method using phosphoglucose isomerase and glucose-6-phosphate dehydrogenase allows detn. of glucose and fructose derived from inulin (polyfructosan) and intybin (a bitter glycoside) which are specific constituents of Cichorium intybus. In model mixtures, the % fructose ranged from 0.5% in pure coffee to 25% in pure chicory. Results of enzymic fructose analysis agreed well with its detn. by thiobarbituric acid, but application of the method to commercial coffee mixtures was rendered invalid by the large variation in fructose contents of various chicory batches (10-25%). TLC of butanol-acetone-water extracts (5:5:1) of coffee-chicory mixtures on silica gel revealed 2 spots specific for chicory. No significant differences were found in Si or Cu contents of coffee and chicory. RM

33

Effect of caffeine on coffee drinking.
Kozlowski, L. T.
Nature, UK **264** (5584) 354-355 (1976) [7 ref. En] [Dep. of Psychology, Wesleyan Univ., Middletown, Connecticut 06457, USA]

2 commercial instant coffees (3.44% and 0.14% caffeine) were mixed to produce doses of 100, 50 and 25 mg caffeine/cup. Results of 3 studies indicated that coffee drinkers consumed more low caffeine coffee than non-decaffeinated coffee; 50-mg and 25-mg coffee intake were greater than 100-

mg intake ($P < 0.02$ and $P < 0.05$, respectively), but 25-mg coffee was not consumed more than 50-mg coffee. AL

34

Glossary of terms for coffee and its products.
India, Indian Standards Institution
Indian Standard IS:7236-1974, 10pp. (1974)
[En] [Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110001, India]

Definitions are given for coffee (types, undried and dried parts), green coffee (geometric characteristics, foreign matter, and defects originating from coffee fruit), and process descriptions. AL

35

Summer school 74 - proceedings in sensory analysis of odour and taste. [Conference proceedings]
Poland, Polish Academy of Sciences, Committee of Food Chemistry & Technology
Acta Alimentaria Polonica 2 (3) 109-244 (1976)
[many ref. En, pl]

This issue of the journal contains the proceedings of the symposium Summer school 74 on Sensory analysis of odour and taste, held in Pulawy, Poland, on 10-12 June 1974. Papers include: The influence of new achievements in sensory analysis on subjective gustometry and olfactometry, by J. Herrmann (pp. 113-132, 31 ref.); Modification of 'stair-case' method for simultaneous determination of detection and recognition thresholds on the example of spices, by T. Przedzdziecka & Z. Baldwin (pp. 163-166); Application of constant stimuli method for odour and flavour difference threshold determination of spices on neutral carriers, by Z. Baldwin & T. Przezdziecka (pp. 167-169, 3 ref.); Application of combined sensory assessment test for quantitative evaluation of quality of roasted coffee, by F. Örsi (pp. 171-174); Progress in standardization of quality evaluation by sensory methods in GDR, by R. Neumann (pp. 185-193, 28 ref.); Application of sensory analysis in the work of the State Inspection of Food Quality [in Czechoslovakia], by J. Barvir (pp. 195-199); Standardization of sensory methods on international and national level, by A. Zaboklicki (pp. 201-205); [continued in following abstr.]
AL

36

Preparation of concentrated extracts, for instance of coffee.
Doat, J.
United States Patent 3 986 346 (1976) [En]

Apparatus for the preparation of conc. extracts of aqueous food products, particularly coffee, comprises a freezer tank, means for producing an ice crystal slurry, centrifuge means, conveying means for passing the slurry into the centrifuge, extracting means, conduit means for collecting products separated from the slurry, and thermal concn. means for receiving the product to be retained and subjecting it to final dehydration.
IFT

37

[Package, designed to withstand excess gauge internal over-pressure, for coffee or products of similar consistency.]
Larsson, L. G.; Bruke, R. L. AB Platmanufaktur
Swedish Patent Application 387 299 (1976) [Sv]

A container for coffee or similar products which are to be packaged in an inert gas atmosphere consists of a rigid outer casing and an inner casing of flexible material, e.g. plastics, paper or metal foil. The inner casing, which is filled separately with an inert gas, is provided with non-return valves and is folded and/or welded such that its shape corresponds to that of the outer casing. W&Co

[The Soft-Can system - a new type of pack.] Das Soft-Can-System - eine neuartige Verpackung.
Hauri, H.
Neue Verpackung 29 (9) 932-933 (1976) [De]

The Soft-Can, developed by AB Platmanufaktur (Sweden), consists of a rectangular outer cartonboard container (standard size, 95 × 95 × 150 mm), an inner plastics pouch, a metallic foil seal, and a plastics lid. The package can be vacuum filled, e.g. for coffee. The packages are formed on a Sigvac machine. HBr

38

[Coffee packaging.]
Toyo Seikan Co. Ltd.
Japanese Patent 5 133 186 (1976) [Ja]

Roast coffee is subjected to vacuum degasification followed by packaging in thermoplastic film containers. IFT

39

[Coffee portion packs.] Portions-Kaffeepackung.
Hemala, Z.
German Federal Republic Patent Application 2 500 131 (1976) [De]

The pack consists of a closed flat sachet made of filter material, particularly water-permeable filter paper, which contains a pre-determined quantity of ground coffee, and an envelope, which is hermetically formed and closely surrounds the sachet. The envelope consists of metallic foil or plastics film. The product yields a beverage equivalent to filtered coffee. W&Co

40

[Detection and evaluation of factors influencing the processing of raw coffee. I.] Über Nachweis und Bewertung von Rohkaffee-Bearbeitungseinflüssen.

I.
Wurziger, J.
Kaffee und Tee Markt 26 (17) 3-4, 6-8, 10-12 (1976) [12 ref. De] [Chem. & Lebensmitteluntersuchungsanstalt, Hygienisches Inst., Hamburg, Federal Republic of Germany]

Directions are given for a series of sample analytical procedures concerned with quality control during processing of coffee beans. The tests are performed on a petroleum-ether extract which is shaken in an aqueous/alcoholic caustic potash solution and separated into 2 phases. The upper phase is used for spectrophotometric detn. of diterpenes and the lower for detn. of the alkaline colour value. Results of measurements on fresh, stored and steam processed coffee beans are presented, showing that the kahweol extinction value falls and the alkaline colour value rises as a result of processing and storage. The influence of heat treatment on the content of carbonic acid-5-hydroxytryptamide (C-5-HT) was also examined since this compound stimulates gastric acid secretion in man; it was shown that steam-treatment reduced the C-5-HT content to around 20-25% of the initial value, thus rendering the product more acceptable to persons with disorders of the digestive system. The C-5-HT contents and alkaline colour and kahweol extinction values are tabulated for numerous samples of coffee beans from widely differing sources. BDH

41

[Dry matter losses during the manufacture of instant coffee.]
Dmitrieva, E. T.; Nakhmedov, F. G.; Khudominskaya, R. N.; Knyazeva, G. V.
Konservnaya i Ovoshchesushil'naya Promyshlennost' No. 6, 15-17 (1976) [Ru] [Vses. Nauchno-issled. Inst. Konservnoi i Ovoshchesushil'noi Promyshlennosti, USSR]

The consumption of dried instant coffee doubled in the USSR in the last 3 yr; quality is regulated by the Government standard GOST 5863-71. DM losses were studied at several plants during various processing stages. Var. Robusta (Indian origin), Santos I (Brazilian) and Robusta from Uganda were tested. Losses in DM% are tabulated. Total DM losses for Santos I totalled 67%, made up of 0.1% on cleaning, 6.9% on roasting, 0.1% on granulation, 59.3% in the sludge during extraction, 0.3% during transportation and storage, 0.2% y dehydration and 0.1% during packaging. The finished product yielded 33.0% of the DM. The total DM losses for the remaining var. studied amounte d to 63.2-63.7%. To produce 1 t of finished product with a moisture content of 3.5%, 3.2821 t green coffee of the Santos I var. with moisture content of 11.0%, representing 2.9211 t DM was needed. For the remaining 2 var. the corresponding figures were 2.6228 t and 2.6587 t DM. The most favourable granule size, temp. and pressure in the extractor are also recommended; temp. and pressure in the 1st extractor should be 70-80° C and 0.0 MPa, in the 2nd extractor 105-110° C and 0.3 MPa and in the 3rd extractor 120-140° C and 0.6 MPa. STI

42

Emergency in a coffee factory. How to cope with a peak crop in a co-operative coffee factory.
Anon.
Kenya Coffee 41 (486) 303-307 (1976) [En]

Suggestions are made on economic handling of sudden peak crops without loss of quality and quantity and by using existing processing capacity. Equations are given for capacity calculations for pulping, fermentation, skin drying, drying and storage. RM

43

[Composition of the oils of Arabica and Robusta raw coffee.] Beiträge zur Zusammensetzung von Arabica- und Robusta-Rohkaffee-Ölen.
Wurziger, J.
Kaffee und Tee Markt 26 (12) 3-7 (1976) [5 ref. De] [Chem. & Lebensmitteluntersuchungsanstalt, Hygienisches Inst., Hamburg, Federal Republic of Germany]

The chemical composition of oil derived from coffee beans is reviewed, and the content and properties of oil from beans of different origin are compared. Coffee oil differs from that of other oilseeds in its contents of diterpenes and diterpene mono-fatty acid esters, in particular those of cafestol and kahweol, which together make up about 20% of the oil fraction. The oil content of Arabica coffee beans, at 12-13%, is invariably higher than that of Robusta beans (7-10%), and the 2 types of beans may also be distinguished by the colour reaction of a petroleum ether extract with potassium iodide and glacial acetic acid; the same reaction may also be used to detect beans that have been subjected to mild heat treatment or prolonged storage at elevated temp. The absence of such a colour reaction with oil derived from Robusta beans, is due to the absence of kahweol (which forms about 15% of the diterpene fraction in Arabica oil). Methods for carrying out the extraction and colorimetric reaction procedures are detailed, and measurements of the extinction coeff. at 290 and 630 nm for several commercial samples are presented. After prolonged storage the properties of extracts of Arabica beans tend to resemble those of Robusta beans, but possibilities for distinguishing between them still exist on the basis of the alkaline colour value after treatment of the extract with an aqueous/alcoholic KOH solution. BDH

44

[Influence of the conditions of freeze-drying on the volatile components and organoleptic characteristics of soluble coffee.]
Colombo, A. J.; Aquarone, E.; Baruffaldi, R.
Revista Brasileira de Tecnologia 6 (1) 17-25 (1975) [14 ref. Pt, en] [Dep. de Tecnologia Bioquimico-Farmaceutica, Fac. de Ciencias Farmaceuticas, Univ. de Sao Paulo, Sao Paulo, Brazil]

Experiments were carried out on a commercial coffee extract, which was freeze-dried to produce a commercial coffee, and on a filter extract obtained from ground beans, which was freeze-dried to produce a filter coffee. Freeze-drying was to final extract concn. of 8°, 12° and 16° Brix, in each case to final temp. of 30°, 60° and 90° C; the freeze-drying process was repeated, to give 2 sets of samples of each product (9 samples/set). The moisture content of the samples was determined, and the areas under gas chromatograms were compared to study the effect on the volatile constituents; additionally, organoleptic tests were carried out. Tabulated results showed that the samples freeze-dried to a final temp. of 30° C had the highest moisture content; the largest gas chromatogram areas were obtained with samples freeze-dried to 60° C; these (60° C) samples received the highest organoleptic scores; and the final extract concn. did not have a significant effect. HBr

45

Diffusion phenomena during the decaffeination of coffee beans.
Bichsel, B.; Gal, S.; Signer, R.
Journal of Food Technology 11 (6) 637-646 (1976) [5 ref. En] [Beethovenstrasse 11, CH-3073 Gümligen, Switzerland]

The diffusion of caffeine in green coffee beans was investigated at atmospheric pressure using dichloromethane as a solvent. The diffusion coeff. of caffeine was determined as a function of temp. and water content of the beans. The mathematical treatment was based on Fick's second law of diffusion applied to a spherical model. The apparent diffusion coeff. are in the range 0.2-1.1 × 10^{-6}cm^2 s^{-1}. AS

46

[Computer control of a modern coffee-roasting plant.] Prozessrechner im Einsatz zur Steuerung modernster Kaffee-Röstanlagen.
Raff, G.
Kaffee und Tee Markt 26 (16) 8-9 (1976) [De]

The Barth computerized system for direct on-line process control of an automatic coffee roasting plant is briefly described. The system controls the delivery of coffee beans of the required quality and in the correct proportions, and feeds them through a hopper into the roasting chamber, where the roasting time and temp. are regulated according to a predetermined programme. At the end of the roasting cycle the roasted beans are cooled, the wt. loss due to evaporation of moisture is determined, and the charge is delivered by compressed air into storage silos. In addition to providing a complete record of production, the system automatically eliminates losses due to blockages and consequent overheating. BDH

47

[Isolation and characterization of coffee polyphenoloxidase.]
Santos Draetta, I. dos; Lima, D. C. de
Coletanea do Instituto de Tecnologia de Alimentos 7 (1) 13-28 (1976) [29 ref. Pt, en]

48

[Effects of roasting on some physical and chemical characteristics of 'arabica' and 'robusta' coffees.]
Sabbagh, N. K.; Yokomizo, Y.
Coletanea do Instituto de Tecnologia de Alimentos 7 (1) 147-161 (1976) [16 ref. Pt, en]

Samples of 3 types of 'arabica' and 1 type of 'robusta' coffee were roasted at 204° C for 3 min, followed by various periods at 180° C; 3 degrees of roasting were tested, giveing wt. losses of 12, 15 and 17%. Tables and graphs of results are given for the pH, acidity, and concn. of moisture, chlorogenic acid, caffeine, ash, soluble solids, reducing sugars, total sugars, soluble carbohydrates and pectosans in the green and roasted coffees. The results show that roasted coffees had lower pH values and soluble solids, chlorogenic acid, total sugar and pentosan concn. and higher ash and caffeine concn. than green coffees. Effects of degree of roasting on the characteristics studied were variable. AJDW

49

Decaffeinated coffee of improved aroma and flavor.
Scelia, R. P.; Fagan, K. W.; Protomastro, M. G.
General Foods Corp.
United States Patent 3 985 905 (1976) [En]

The aroma and flavour of decaffeinated coffee material are improved by contact with an aqueous solution obtained from the water washing of green coffee materials. IFT

50

[Improvement of taste and preservation of soluble coffee granules.] Verfahren zur Geschmacksverbesserung und Frischbehaltung von löslichem Kaffeegranulat.
Lepper, W.
German Federal Republic Patent Application 2 504 434 (1976) [De]

Air which has penetrated the interstices of the coffee granulate immediately after evaporation of the water is replaced by an inert gas, e.g. N_2. The product yields a coffee having the taste of freshly-filtered coffee, even after several years' storage. W&Co

51

[Residues of organochlorine pesticides in foods and beverages.]
Cerutti, G.; Finoli, C.; Gerosa, A.; Zappavigna, R.

Rivista della Societa Italiana di Scienza dell'Alimentazione 5 (10/12) 339-344 (1976) [13 ref. It, en] [Istituto Ind. Agrarie, Univ. degli Studi di Milano, Milan, Italy]

Residues of organochlorine pesticides (α-BHC, γ-BHC, β-BHC, heptachlor, heptachlor epoxide, aldrin, dieldrin, pp'-DDE, pp'-TDE, pp'-DDT, op'-DDT) were determined by GLC in 10 samples of (i) uperized or pasteurized milks, 8 samples of (ii) margarine, 2 samples of (iii) cheese, 2 samples of (iv) butter, 7 samples of (v) coffee and coffee substitutes and 39 samples of (vi) Italian and imported beers. All samples studied were manufactured in 1976, except for some (vi) samples manufactured in 1974 and 1975. Tables of results are given. Ranges of values for total residue concn. were (i) 0.006-0.069 ppm; (ii) 0.17-0.60 ppm (in the fat fraction), (iii) 0.19-0.23 ppm (in the fat fraction); (iv) 0.12-0.18 ppm (in the fat fraction); (v) 0.005-0.015 ppm; and (vi) (1974 batches) 0.5-23.5 μg/l., (1975 batches) 0.5-60.5 μg/l., and (1976 batches) not detectable-6.0 μg/l. The frequency of occurrence of individual pesticides in the samples studied is discussed. AJDW

52

Method for encapsulating materials.
Palmer, E.
United States Patent 3 989 852 (1976) [En]

Materials, e.g. flavourings, coffee oils, conc. orange juice and lemon oils, which tend to deteriorate, are converted to a viscid composition for dispersion with agitation into a dry powdered, sorbent, film-forming agent forming gelled particulates. IFT

53

[Use of metallized plastics laminate films for packaging of foods.] Der Einsatz metallisierter Verbundfolien für die Lebensmittel-Verpackung.
Weiss, G.; Betz, W.
Verpackungs-Rundschau 27 (9) 1106, 1108, 1110 (1976) [De, en, fr]

Characteristics (opacity, permeability to N_2, O_2, CO_2, and water vapour) of metallized polyamide and polyester films and their laminates with polyethylene or polypropylene are discussed; a table of data for these characteristics is given. Applications of these films in food packaging are discussed, including packaging of meat and meat products, roasted coffee, and powdered foods. IN

54

[Individual package, containing a soluble product for production of a beverage.] Portionenpackung, enthaltend ein zur Herstellung eines Getränkes auflösbares Produkt.
Leppen, W.
German Federal Republic Patent Application 2 503 351 (1976) [De]

The package, designed for granulated coffee extract, contains an individual portion firmly enclosed in a glass tube with a detachable closure element (or a terminal section which can be broken off) at one end. The tube contains a protective gas, e.g. N_2. The package is convenient and economical in use and ensures protection of the product prior to use. W&Co

55

Processing of coffee.
India, Coffee Board Central Research Station
Indian Coffee 40 (9) 266-270 (1976) [En]

Correct processing procedures to preserve the quality of Indian coffee are briefly outlined under the following headings: harvesting; hygiene; preparation of parchment coffee (natural fermentation, treatment with alkali, removal of mucilage by friction); preparation of cherry coffee; coffee stripping; and storage and dispatch. 'Do's' and 'don'ts' are shown in a table. RM

56

[Polyphenol oxidase activity of four species of coffee beans during storage.]
Oliveira, J. C.; Silva, D. M.; Amorim, H. V.; Teixeira, A. A.
Cientifica 4 (2) 114-119 (1976) [11 ref. Pt, en]

Ripe beans of Coffea arabica (3 cultivars), C. canephora, C. dewevrei and C. liberica were pulped on the day of harvesting, subsequently washed, and their enzyme (polyphenol oxidase) activities were determined (after extraction) after 1, 2, 3 and 14 months' storage; unripe C. arabica beans were also tested. The specific activities varied considerably and decreased in the following order: C. dewevrei, C. canephora, C. arabica (unripe), C. liberica and C. arabica (ripe). The colour of the bean appeared to be associated with the decrease in enzyme activity. [From En summ.] HBr

57

High-pressure liquid chromatography of caffeine in coffee.
Madison, B. L.; Kozarek, W. J.; Damo, C. P.
Journal of the Association of Official Analytical Chemists 59 (6) 1258-1261 (1976) [9 ref. En] [Procter & Gamble Co., Winton Hill Tech. Cent., Cincinnati, Ohio 45224, USA]

The caffeine is extracted from the sample with water and/or methylene chloride, and then separated from interfering materials by passing an aliquot of the extract through a high-pressure column containing sulphonated cation exchange resin, using 0.01M HNO_3 as the mobile phase. An UV detector measures the absorption of the solution directly. The method is rapid and eliminates the lengthy separations common to other methods. The procedure was applied successfully to

decaffeinated and non-decaffeinated green, roasted, and instant coffees. This method gives a more accurate measure of the caffeine content in decaffeinated coffee samples than the micro Bailey-Andrew and modified Levine methods, with equal or better precision. This method gives results equal to those obtained by AOAC official methods for non-decaffeinated samples. AS

58

[Isolation and spectroscopic investigation of brown pigments of some coffees of different degrees of roasting.]
Barbetti, P.; Fardella, G.; Chiappini, I.
Industrie delle Bevande 5 (6) 94-98 (1976) [22 ref. It, en] [Istituto di Chimica delle Sostanze Naturali, Univ. degli Studi, Perugia, Italy]

An IR and UV spectroscopic investigation of brown pigments isolated from Elisa Santos Brasil, Ivory Coast, and Java coffees was carried out as a function of the degree of roasting. Experimental results showed a marked similarity in the spectral properties of the isolated pigments from the 3 different coffees and the absence of appreciable changes in these characteristics with respect to the roasting time. This indicated that no noteworthy structural modification took place as a result of the roasting process, and probably only an increase in the degree of polymerization occurred. The investigation provided information on these macromolecules and allowed an interesting comparison with some natural humic and fulvic acids and some melanoidins obtained from a Maillard reaction model-system. AS

59

Some ways to eliminate too much of a good thing.
Lee, S.
Tea and Coffee Trade Journal 148 (12) 6, 8 (1976) [En]

3 methods of overcoming odour pollution from coffee roasting plants are briefly discussed, viz. thermal oxidation, C adsorption and chemical absorption. The latter method involves removal of solid particles and soluble gases in a Venturi scrubber, followed by countercurrent passage through a packed tower with various chemical reagents (usually oxidants, e.g. NaOCl, $KMnO_4$). RM

60

Coffee extraction process.
Marsh, W. C.; Wimmers, J. E. Societe d'Assistanc Technique pour Produits Nestle SA
United States Patent 3 995 067 (1976) [En]

A coffee extraction process employs ⩾3 serially connected cells containing roast ground coffee, the cells being changed for successive extraction cycles. The end cell containing the most exhausted coffee is removed each time and a cell containing fresh coffee and an aqueous coffee brew is added at the opposite end. IFT

61

Method for treating steam coffee aromas.
Baron, R. M.; Vitti, C.; Yadlowsky, S.; Stolz, R. P. General Foods Corp.
United States Patent 3 991 223 (1976) [En]

Roasted coffee is contacted with steam and the evolved vapours cooled to obtain an aqueous condensate which is contacted with a liquid glyceride material in 2 stages. The resulting aqueous condensate is incorporated in a soluble coffee product while the second glyceride fraction is contacted with natural grinder gas and also incorporated in the coffee product. IFT

62

Decaffeination process.
Erb, W. W.; Einstman, W. J.; Jones, G. V.; McGregor, G. A. General Foods Corp.
United States Patent 3 989 850 (1976) [En]

Green coffee containing caffeine is added to one end of an extraction zone and withdrawn from the other end while a water solution of coffee solubles is flowed through the zone counter-current to the coffee. Surface solids are withdrawn from the coffee such that <3% remain after which the coffee is dried at an air temp. of ⩽200°F. IFT

63

[Method for producing coffee with condensed milk.]
Lapshov, O. V.; Lifshits, I. I.; Platatsis, L. S.; Kukars, P. P. Rezeknenskii Molochnokonservnyi Kombinat
USSR Patent 525 447 (1976) [Ru]

A product of improved quality is obtained by preparing a coffee and chicory concentrate by introducing the coffee into chicory-sugar syrup. The concentrate is introduced into condensed milk during cooling, and the product is packaged. W&Co

64

Pyrrylmethylthio flavoring agents.
Winter, M.; Gautschi, F.; Flament, I.; Stoll, M.; Goldman, I. M. Firmenich & Cie
United States Patent 3 989 713 (1976) [En]

Pyrrole S compounds, e.g. N-methyl-pyrryl-2-methyl sulphides or (N-methyl-pyrryl-2)-methyl-thiol acetate, are used as flavourings in foods and beverages, particularly coffee beverages made from soluble coffee. GL

65

Coffee and its products - vocabulary.
International Organization for Standardization
International Standard **ISO 3509-1976,** 11pp. (1976) [En, Fr]

This standard defines the most commonly used terms relating to coffee and its products, covering types of coffee, parts of the undried and dried fruit, green coffee (geometric characteristics, foreign matter, defects originating from coffee fruit), and process descriptions. En and Fr indexes are included. AL

66

[Ministerial decree of 20 May 1976 regulating production and trade in decaffeinated coffee.]
Italy, Ministro per la Sanita
Bollettino dei Laboratori Chimici Provinciali 27 (9) L286-L289 (1976) [3 ref. It]

The ministerial decree of 28 Dec., 1972 is amended with specifications on the permitted caffeine content, solvent residue and moisture in decaffeinated raw and roasted coffees and coffee extract, and on physico-chemical characteristics and purity of caffeine-extracting agents (dichloromethane and ethyl acetate). RM

67

Reactivation mechanisms of thiamine with thermostable factors. [Lecture]
Murata, K.; Yamaoka, M.; Ichikawa, A.
Journal of Nutritional Science and Vitaminology 22 (suppl.) 7-12 (1976) [16 ref. En] [Nutr. Lab., Fac. of the Sci. of Living, Osaka City Univ., Sumiyoshi-ku, Osaka, Japan]

Studies on thermostable thiamin-inactivating factors in foods are discussed. Thiamin inactivating activities of black tea and of fermented fish were lower than those of fern leaf and shellfish respectively. Thiamin inactivation activity and thiamin disulphide formation by various flavones, catechol, pyrogallol, caffeic acid, dihydroxyphenylalanine, haemin, and flavonoids are discussed. Thiamin inactivation activities of extracts of 'shiitake' mushrooms (Lentinus edodes), carrots, coffee, black tea, okra and butter flower (Pentasite japonicus) stalk were small. 2-methyl-4-amino-5-aminomethylpyrimidine was formed during reaction of thiamin with catechol. [See FSTA (1977) 9 6A408.] AJDW

68

[Technical note: agglomeration.]
Anon.
Industria Conserve 51 (2) 131-137 (1976) [It]

This account includes notes on the mechanism of agglomeration, its 4 stages, methods of re-humidification, preparation of dried whole milk and instant coffee powder for agglomeration, and 7 processes, illustrated with diagrams. RM

69

[Process for removing physiologically harmful outer layers from kernels used as foods.] Verfahren zur Beseitigung gesundheitsschädlicher Aussenschichten von als Nahrungs- und Genussmittel dienenden Kernen.
Mohr, E.; Seiler, A. **Germany, Federal Republic of,** Inge Institut für Genussmittelforschung GmbH
German Federal Republic Patent Application 2 455 591 (1976) [De]

The kernels are first treated with a compound liberating active oxygen and subsequently submitted to heat-treatment. Two reactors were charged with 100 kg groundnuts and 100 kg raw coffee, respectively. Each was sprayed with 1 kg of a 3% aqueous H_2O_2 solution. After a reaction time of 10 min, the groundnuts were washed at 120-150° C and the coffee at 190-210° C for 8-12 min at normal pressure. The content of 5-hydroxytryptamine was thereby reduced by 55 and 50%, respectively. W&Co

70

[Method for reducing the carboxylic acid-5-hydroxytryptamide content of coffee beans.] Verfahren zur Herabsetzung des Carbonsäure-5-hydroxytryptamid-Gehaltes von Kaffeebohnen.
Bürgin, E. Coffex AG
Swiss Patent 579 876 (1976) [De]

The content of the title tryptamide in green coffee beans is substantially reduced by exposing the beans to oxidizing agents, preferably O_2 or ozone-enriched air, during ⩾1 phases of the roasting process. W&Co

71

Improving the flavour of decaffeinated coffee by radio frequency heating to rapidly dry coffee benas.
Fogel, H. P.; Holzberg, I. General Foods Corp.
United States Patent 3 989 849 (1976) [En]

Green coffee beans are decaffeinated using radio frequency heating for 2-90 min at 70-360° F to impart a porous structure to the beans. An improved flavour results in the decaffeinated coffee product when roasted. GL

72

Flavoring agent.
Winter, M.; Gautschi, F.; Flament, I.; Stoll, M.; Goldman, I. M. Firmenich & Cie
United States Patent 3 985 906 (1976) [En]

The flavour of soluble coffee material is modified by the incorporation of a pyrrole S compound with the general structure pyrrole compound with substituted $-CH_3$ and $-CH_2SR$ groups, where R is methyl, ethyl, furfuryl or acetyl. ELC

73

[Residues of organochlorine pesticides in tea and coffee.] Organochlor-Pestizidrückstände in Tee und Kaffee.
Blumenthal, A.; Cerny, M.
Mitteilungen aus dem Gebiete der Lebensmitteluntersuchung und Hygiene 67 (4) 515-520 (1976) [5 ref. De, fr, en] [Zentral-Lab. des Migros-Genossenschafts-Bundes (MGB), Zürich, Switzerland]

The content of organochlorine pesticide residues, including those of hexachlorobenzene, dieldrin, endrin, DDT and related compounds, in dried tea leaves and tea infusions obtained from various sources was determined by analysis. Ceylon and Indian tea samples were included in addition to a selection of European herb teas. Residual levels were generally higher in respect of herb teas in the dry state, but due to the low water solubility of the compounds concerned much lower values were recorded in the infusions prepared by contacting 5 g dried leaf with 500 g boiling water. Residues consisted principally of HCH isomers, but are not considered to represent any toxic hazard at the estimated level of tea consumption in Switzerland (0.8-0.9 kg/family/yr). Similar detn. of coffee gave very low values of all pesticides, although mixtures of Robusta and Arabica beans appeared to contain larger amounts than either var. individually. As in the case of tea, only a small proportion of the residual would be extracted during the preparation of beverages. BDH

74

Studies on ascorbic acid in coffee plants. II. Distribution in ripe fruits and its relationship with coffee quality.
Vasudeva, N.; Gopal, N. H.
Journal of Coffee Research 4 (2) 25-28 (1974) [2 ref. En] [Div. of Plant Physiol., Cent. Coffee Res. Inst., Coffee Res. Sta. 577 117, Chikmagalur District, Karnataka, India]

Ascorbic acid content was estimated in different components of ripe fruits of Coffea arabica L. (S. 795, S. 1934 and 'Kents'), Coffea canephora Pierre Ex Froenher var. S. 274 and Coffea dewevrei var. excelsa. Among the five plant types there were no significant differences in the ascorbic acid content in the fruit wall and seed, but there were significant differences in the ascorbic acid content of the mucilage. The content of ascorbic acid was in the following order in the various fruit components: seed > fruit wall > mucilage. Ascorbic acid content was also determined in five different quality grades of arabica coffee seeds. It was found that the fine grade seeds had the highest ascorbic acid content while the lowest was in the poor grade seeds. In all 5 var. the ascorbic acid content of fruit wall and seeds was lower for ripe fruits than for the green fruits studies in part I [FSTA (1974) 6 10H1777]. [See FSTA (1976) 8 2H324 for part III.] AS

75

Changes during storage in stability and composition of ultra-heat-treated aseptically-packed cream of 18% fat content.
Anderson, M.; Brooker, B. E.; Cawston, T. E.; Cheeseman, G. C.
Journal of Dairy Research 44 (1) 111-123 (1977) [26 ref. En] [Nat. Inst. for Res. in Dairying, Shinfield, Reading RG2 9AT, UK]

Stability of the homogenized UHT cream when added to hot coffee was indirectly monitored in 10 batches, stored for 10 wk at different temp. A tendency to coagulate under standard conditions (instability) is known as feathering. Stability was determined by a procedure in which acetate buffer instead of coffee solution was used as test solution. Distribution of components between the fat and aqueous phases of the stored cream was also monitored. Feathering score (stability) decreased during storage but was not accompanied by any increase in non-protein N levels. Amount of casein and Ca in the fat phase of the cream increased with time and was inversely related to feathering score. Some batches of cream contained 0.1% Na_2CO_3 and 0.1% sodium citrate as stabilizers and these improved feathering scores early in the storage period. Initially, the fat phase of these creams contained less casein and Ca than those without the additives, but after 10 wk the differences in feathering score and in casein and Ca distribution between the 2 types of cream diminished. Examination by electron microscopy showed that casein micelles were associated with fat globules, apparently linking several globules together; this was initially less in the creams containing additives, but after 10 wk the appearance of all creams was similar. Electrophoretic separation of the fat globule membrane (FGM) proteins by SDS-polyacrylamide gel electrophoresis showed that casein was the principal protein component, but that β-lactoglobulin and native FGM proteins were also present. AS

76

The package ... makes the product.
Anon.
Food Engineering International 1 (11) 44-45 (1976) [En]

The development of equipment and materials for producing an acceptable coffee bag is outlined. The cellulosic material used for tea bags was unsuitable since it degrades ground coffee. A food-grade polyester web was found to be suitable. The over-wrap used is a flexible, gas-tight, foil/paper laminate. The equipment used, adapted from a Pneumatic Scale Co. teabagger, is a high-speed, horizontal form-fill-seal machine. The web is filled with ground coffee, over-packaged and at the same time flushed with an inert gas. The line currently in use at the Morning Treat Coffee Co. (Baton Rouge, Louisiana, USA) produces 200 bags/min. Shelf-life of the bagged coffee is claimed to be >6 months. JA

77

Rubber hydrochloride: useful 'old-timer'.
Sacharow, S.
Food Engineering International 1 (8) 40-41 (1976) [En]

Use of rubber hydrochloride film (e.g. Pliofilm) for packaging has declined in recent yr but the film is still used in fair amounts for packaging cheese and meat. This paper briefly discusses the manufacture and properties of the film and mentions its use in laminations with paper, foil or other plastics film. Unplasticized rubber hydrochloride film is tough and inextensible while plasticized film is elastic and soft. The film is heat-sealable at 250-300° F, and has good resistance to oils (except essential oils), grease, acids and alkalies. Moisture and gas permeability and transmission rates increase with increasing plasticizer content. The unique property of Pliofilm which allows CO_2 emitted from freshly ground coffee to escape while preventing O_2 intake makes it an ideal packaging film for coffee. JA

78

Carbofuran residue in coffee bean.
Venkataramaiah, G. H.; Singh, M. B. D.
Journal of Coffee Research 6 (2) 40-46 (1976) [13 ref. En] [Cent. Coffee Res. Inst., Coffee Res. Sta. 577 117, Chickmagalur District, Karnataka, India]

Carbofuran (3% granular) was applied at levels of 66 g/application to the soil around coffee plants, using the following application schedules: 1 application (June); 1 application (Oct.); 2 applications (June and Aug.); 2 applications (Sept. and Oct.); 3 applications (June, Aug. and Sept.); 3 applications (Aug., Sept. and Oct.); 4 applications (June, Aug., Sept. and Oct.). Beans were harvested in Dec. and processed and analysed in Jan. The beans were ground, extracted and fractionated into 7 fractions which were each analysed for carbofuran residues by TLC; the R_f values are tabulated. Carbofuran was not detected but 7 carbofuran metabolites (not identified) were found. These residues were very persistent and were even detected in beans obtained from plants given a single application of carbofuran in June. It is recommended that use of this pesticide in coffee plantations be avoided until further toxicological and pharmacological data on the metabolites are available and until tolerance limits are fixed. JA

79

[Method for processing green coffee beans.]
D. E. J. International Research Co. BV
Netherlands Patent Application 7 604 620 (1976) [Nl]

Components which contribute to the presence in roasted coffee beans of substances having an irritating effect on the digestive tract, e.g. carboxy-5-hydroxy-tryptamides, may be removed, without substantially lowering the caffeine content, by extracting the green beans at elevated temp. and atmospheric pressure with a solvent consisting of an ester or ketone which has a bp of 50-100° C and occurs naturally in freshly roasted coffee in amounts > 10 ppm. The solvent concn. in the green beans is subsequently lowered by a heat and/or vacuum and/or steam treatment to a level leading to not more than the naturally occurring amounts in the roasted beans. The solvent may be methyl ether ketone or methyl acetate. W&Co

80

[Method and device for roasting coffee.]
D. E. J. International Research Co. BV
Netherlands Patent Application 7 605 764 (1974) [Nl]

Green coffee beans are treated with a hot granular solid heat transfer medium which is inert under process conditions, can be easily separated from the coffee and may be re-circulated. The manner of heating the heat transfer medium, the ratio between its amount and the amount of coffee, and its grain size, are chosen such that roasting is effected in < 5 min, preferably in 1-3 min. Glass beads, quartz beads or similar material may be used as the heat transfer medium. W&Co

81

[Volatile constituents of roasted coffee.]
Vitzthum, O. G.; Werkhoff, P.
Annales des Falsifications et de l'Expertise Chimique 69 (746) 725-735 (1976) [18 ref. Fr] [Dep. of Sci. de la Soc. Hag, Hagstrasse, D 28 Bremen, Federal Republic of Germany]

A large number of previously unidentified volatile components was determined in trace amounts down to 1 part/billion from roasted coffee volatiles by steam distillation or extraction with supercritical CO_2 under pressure, followed by MS-GLC. By these methods, the limit of detection was lowered by a factor of 10^2 permitting the first recorded detection of indoles, quinoleins, cycloalkylpyrazines (mainly acetyl and furyl), several oxazoles and thiazoles, furans, pyrroles (including N-acetyl and N-propionyl pyrrole), and thiophenes as well as methyl furfuryl disulphide. The structure of many compounds was confirmed by synthesis. The good agreement between the chromatograms obtained from both types of extract confirmed that no artefacts were formed during steam distillation. RM

82

Flavoring foods with 8-methyl-non-2-ynol and its derivatives.
Jindra, H.; Clinton, W. P. General Foods Corp.
United States Patent 4 001 454 (1977) [En]

A woody flavour is imparted to foods, e.g. coffee, by the incorporation of 8-methyl-non-2-ynol and its derivatives. IFT

83

Some aspects of quality of Indian Coffee.
Gopal, N. H.; D'Souza, G. I.
Indian Coffee 41 (1) 14-16 (1977) [15 ref. En]
[Cent. Coffee Res. Inst., Coffee Res. Sta. 577 117 Chikmalagur District, Karnataka, India]

The quality characteristics of Indian arabica and robusta coffees are reviewed, and possibilities for improvement are considered. RM

84

Coffee: beneficial and harmful effects of chemical weed control.
Awatramani, N. A.
Indian Coffee 41 (1) 17-24 (1977) [10 ref. En]
[Cent. Coffee Res. Inst., Coffee Res. Sta. 577 117 Chikmalagur District, Karnataka, India]

Results of 3-yr trials on the effects of chemical weed control showed that Gramoxone (paraquat) or Gramoxone + simazine was cheaper than manual control and increased yield without affecting cup quality or raw, roast and liquor scores. RM

85

[Analysis of coffee and coffee products. Determination of ground roasted coffee: air-jet sieving method.] Untersuchung von Kaffee und Kaffee-Erzeugnissen. Bestimmung der Korngrösse von gemahlenem Röstkaffee: Luftstrahlsieb-Verfahren.
Germany, Federal Republic of, Deutsches Institut für Normung eV
German Federal Republic Standard DIN 10765, 2pp. (1975) [De]

In this reference method, which is particularly suited to finely ground roasted coffees, the sample is placed on the test sieve (0.04 mm (finest) mesh), and the fines are removed by a strong air jet. The residue is analysed gravimetrically, and the sieving process is repeated with increasing mesh sizes (to 1.0 mm in 5 further stages). A formula is given for calculating the grain fractions in g/100 g, and a table lists the max. permissible deviation for each of the grain fraction ranges. HBr

86

[Analysis of coffee and coffee products. Determination of chlorogenic acid content: method for coffee extracts.] Untersuchung von Kaffee und Kaffee-Erzeugnissen. Bestimmung des Gehalts an Chlorogensäuren: Verfahren für Kaffee-Extrakte.
Germany, Federal Republic of, Deutsches Institut für Normung eV
German Federal Republic Standard DIN 10767 Blatt I, 2pp. (1976) [De]

In this method, the sample is dissolved in boiling water, with subsequent filtration if cloud formation is observed. The solution or filtrate is divided into 2 portions, which are diluted with 1 of 2 buffer solutions (1 with and 1 without boric acid). The extinctions of the 2 resultant solutions are then measured at 357 nm. The content of chlorogenic acids, viz. coffeoyl-quinic acids (3,4-dihydroxy-cinnamoyl-quinic acids), including crypto-, neo- and iso-chlorogenic acids, is determined from the difference in the extinctions of the sample solutions and that of a standard chlorogenic solution. The method can be used for both liquid or dried coffee extracts. Results of duplicate analyses must not differ by >0.3 g/100 g sample; comparative tests between 2 laboratories by >0.5 g/100 g. HBr

87

[Dehydration by microwaves. Evaporation and sublimation under vacuum.]
Archieri, C.
Bios 7/8 (12/1) 10-21 (1976/1977) [9 ref. Fr]
[Inst. de Recherches Appliquees aux Boissons, 120 Avenue Foch, 94003 Creteil, France]

This illustrated review-type article deals with definition, properties and mode of action of microwaves; microwave driers (generators and drying chambers); different methods of microwave freeze-drying; and vacuum microwave evaporation by the Gigavac process, with particular reference to the high quality of its products. Application of the procedures discussed to drying of strawberries, raspberries, mushrooms, coffee, passion fruit juice and orange juice is described (or briefly mentioned) from the literature. SKK

88

[Slip characteristics and bond strength of plastics films for packaging coffee.] Untersuchung der Gleitfähigkeit und Verbundfestigkeit von Kaffeefolien.
Voss, H. J.
Neue Verpackung 29 (12) 1360, 1362 (1976) [De]

In view of the loss of slip after lamination of some types of polyethylene (PE), particularly when oleic acid amide is used as slip agent (and hence the likelihood of packaging problems in vertical form-, fill- and seal machines), the slip characteristics of a typical coffee pack laminate (PE/Al/PE) were tested; 3 different types of PE were used and the oleic acid amide was replaced by erucic acid amide in some of the laminates. Additionally, the bond strength was studied, using 2 different adhesives. Use of erucic acid amide reduced the loss of slip, but also reduced the bond strength. It is considered that in practice a compromise between good slip and good bond strength would have to be made. HBr

89

Effects of cultural practices on the quality of Kenya coffee. I. Effects of Napier grass mulch and nitrogen fertilizers on the quality of Arabica coffee in Kenya.
Kamau, I. N.

Kenya Coffee 41 (487) 361-375 (1976) [24 ref. En] [Coffee Res. Sta., Ruiru, Kenya]

The effects of continuous mulching and N fertilization (101-103 kg/ha) on the quality of raw beans, roast beans and coffee liquor were studied over 6 yr. Tabulated results showed that during this period mulching increased the size but had an adverse effect on colour and overall quality of raw beans; the roast coffee quality, and the acidity, body and flavour of coffee liquor was not significantly affected. The final coffee classification was slightly improved (61% in class 3, 37% in class 4 and 2% in class 5 vs. 50, 46 and 4% without mulch). N-fertilization produced poor-sized beans, slightly improved the colour and the overall quality of raw beans, had no effect on roasted bean quality or on coffee liquor but improved the final coffee classification (57% in class 3, 42% in class 4 and 1% in class 5, vs. 54, 41 and 5% without N). RM

90

[Effect of roasting methods on the quality of various kinds of coffee.]

Solov'eva, T. Ya.; Simonova, V. N.

Izvestiya Vysshikh Uchebnykh Zavedenii, Pishchevaya Tekhnologiya No. 5, 165-166 (1976) [2 ref. Ru] [Leningradskii Inst. Sovetskoi Torgovli im. F. Engel'sa, Leningrad, USSR]

The effect of convection roasting and roasting by IR radiators at 200-215° C on coffee quality (extractibility, caffeine content, organoleptic quality, volatile aroma substances content) was investigated. When IR radiation was applied the contents of extractible substances and caffeine did not change; the same applied to the organoleptic properties. In the case of Robusta coffee the content of volatile aromatic substances increased by 17.5-22.1%, but no increase was observed with Santos and Plantation var. STI

91

Solid state control is a coffee roaster's dream.

Enberg, K.

Tea and Coffee Trade Journal 149 (1) 32-33 (1977) [En] [Jabez Burns Div., Blaw-Knox Food & Chem. Equipment Inc., USA]

A solid state roaster controller was developed, which features high reliability by eliminating failure-prone relays; simple 2-step operation; high flexibility readily permitting reprogramming of pre-set programmes; modular construction allowing fast and easy repair; low coltage design (5V-dc) wired through fail-safe control lines; 0.5° temp. resolution control; continuous roast status display; and continuous comprehensive and automatic record keeping. Automatic control can include pilot, safety and main fuel control, feed and discharge, complete cooler, stoner and fan operations, and continuous monitoring of all mechanical functions. The microprocessor used is an eight-bit processor, operating simultaneously on 8 lines of data. RM

92

Comparison of gas chromatographic and spectrophotometric methods of determination for caffeine in coffees and teas.

Strahl, N. R.; Lewis, H.; Fargen, R.

Journal of Agricultural and Food Chemistry 25 (2) 233-235 (1977) [17 ref. En] [Coll. of Pharmacy, Univ. of New Mexico, Albuquerque, New Mexico 87131, USA]

Caffeine (CAF) levels in instant regular coffees, instant decaffeinated coffees, and instant teas were determined and compared using spectrophotometric and gas chromatographic methods. Modification of a previously reported spectrophotometric assay for CAF in biological fluids [Journal of Pharmacology and Experimental Therapeutics (1953) 107, 519] was necessary to reduce interference from theophylline (THP) and theobromine (THB). Readjustment of the buffer pH and the introduction of an intermediate buffer wash were found to effectively limit interference from THB and THP. The gas chromatographic assay involves extraction of CAF into benzene followed by evaporation of the benzene and redissolution of the CAF into chloroform for injection into the gas chromatograph. The spectrophotometric method consistently gave higher levels of CAF than were found by the gas chromatographic method for the decaffeinated and regular coffees. However, these differences were not observed for the teas. Using the results from the gas chromatographic assay, 2 decaffeinated coffees were found to be >97% CAF free. CAF levels in regular coffees were found to vary as much as 32% within the group of 5 brands studied. AS

93

Tocopherols in the unsaponifiable matter of coffee bean oil.

Folstar, P.; Plas, H. C. van der; Pilnik, W.; Heus, J. G. de

Journal of Agricultural and Food Chemistry 25 (2) 283-285 (1977) [21 ref. En] [Agric. Univ., Lab. of Food Chem., Wageningen, Netherlands]

The unsaponifiable matter of coffee oil was fractionated by column chromatography. TLC of the fractions indicated for the first time the presence of α- and (β + γ)-tocopherol. They were identified by UV, IR, NMR, and mass spectrometry. In oil of green coffee beans of different origin, α- and (β + γ)-tocopherol were found to be present in concn. of 89-191 and 252-465 μg/g oil, respectively. AS

94

[Effect of extraction temperature on the concentration of some components of dry coffee extract.] Die Gehalte einiger Bestandteile von Kaffee-Extraktpulvern in Abhängigkeit von der Extraktionstemperatur. [Lecture]

Leifert, A.

Lebensmittelchemie und Gerichtliche Chemie 31 (1) 9-10 (1977) [De] [Chem. Untersuchungsamt, 4700 Hamm, Federal Republic of Germany]

Coffee extracts were produced from a Colombia-Arabica roasted coffee in an industrial pilot plant at 110° and 180° C and a laboratory autoclave at 110-230° C (batch process). GLC and TLC analysis revealed arabinose in all the extracts, plus galactose, mannose, fructose and traces of rhamnose and ribose at higher extraction temp. (140-160° C). Quantitative GLC showed a rise in arabinose and mannose with extraction temp., to 0.63 and 1.63%, respectively. High-pressure extraction also caused decomposition of chlorogenic acid, increasing with temp., and liberation of protein- or melanoidin-bound chlorogenic acid. Quinic acid produced from hydrolysis of chlorogenic acid and determined by GLC increased with extraction temp. to 5.9-10.1%. The increase in quinic acid concn. in roasted coffee was concomitant with the chlorogenic acid decomposition. RM

95

A 2-year feeding study of instant coffees in rats. I. Body weight, food consumption, haematological parameters and plasma chemistry.
Würzner, H.-P.; Lindström, E.; Vuataz, L.
Food and Cosmetics Toxicology 15 (1) 7-16 (1977) [36 ref. En] [Nestle Products Tech. Assistance Co. Ltd., Biol. Lab., CH-1350 Orbe, Switzerland]

Different technological variables in the production if instant-coffee were tested in a 2 yr feeding study in rats. Coffee samples extracted at different rates were obtained from industrial and decaffeinated coffees, which were either freeze- or spray-dried. The instant coffees were incorporated at a 6% level in a commercial standard diet fed to the rats. Effects on growth, food consumption, haematology and blood chemistry were investigated. It is concluded that instant coffees, regular or decaffeinated, ingested by the rats in large amounts caused no toxic effect. The average daily intake of instant coffee was approx. 2.9 g/kg in males and 3.5 g/kg in females if the initial period of observation is not taken into account. Assuming that a cup of instant coffee contains 2.5 g coffee solids, the average amount of coffee consumed by the rats, on a body-wt. basis, would correspond to about 80 cups of coffee/day for a man of 70 kg and 70 cups/day for a woman of 50 kg. Significant differences between some groups of the rats in blood chemistry and haematology were noted, but they were not considered to indicate toxic or ill effects. VJG

96

Flavoring agent.
Winter, M.; Gautschi, F.; Flament, I.; Stoll, M.; Goldman, I. M. Firmenich & Cie
United States Patent 4 000 328 (1976) [En]

Coffee is modified by the addition of a compound having the general formula of thiophene or dithiophene with various substituted alkyl groups (structure given). ELC

97

[Application of nuclear magnetic resonance spectroscopy in the food processing industry.]
Anwendung der Kernresonanzspektroskopie in der Lebensmittelverfahrenstechnik.
Weisser, H.
Zeitschrift für Lebensmittel-Technologie und -Verfahrenstechnik 28 (3) 97-101 (1977) [86 ref. De] [Inst. für Lebensmittelverfahrenstech., Univ., Karlsruhe, Federal Republic of Germany]

The basic principles of NMR analysis are discussed, and available apparatus is briefly reviewed. Applications of NMR analysis in the food industry are briefly described including detn. of moisture, fat and DM in dairy products, detn. of moisture in margarine, oil emulsions and other foods, detn. of free and bound water, and relaxation measurements on coffee extracts. AJDW

98

Five steps of the freeze-dry process.
Petersen, E. E.
Tea and Coffee Trade Journal 149 (4) 14-15, 45 (1977) [En] [A/S Atlas, Copenhagen, Denmark]

The following steps of the freeze-drying process are described: foaming, freezing, granulation, sifting and tray-filling. New developments, including an automatic and continuous system for direct dispersion of N_2 into coffee extract (direct liquid foaming), freezing of the extract on a rotating drum cooled by direct evaporation of the refrigerant, and single step granulation of frozen slices are illustrated by diagrams and photographs. The compact design of the integrated Atlas unit for freezing, granulation, sifting and tray-filling achieves considerable power economy. RM

99

[New process for making chicory for coffee starting from forced endive roots and from chicory.]
Lefebvre, C.
French Patent Application 2 302 043 (1976) [Fr]

Instead of the usual coffee chicory root, Witloof chicory, a type of endive, can be used as raw material. These endive roots are used after forcing and removal of the endive heat, by which forcing the inulin of the root is degraded into fructosans, which are essential for the product. The forced endive roots are dried, ground to a granular powder and roasted. W&Co

100

Regulated ripening of Coffea arabica L. in Kenya: studies on the use of 2-chloroethyl phosphonic acid.
Opile, W. R.; Browning, G.
Kenya Coffee 42 (490) 17-26 (1977) [13 ref. En] [Coffee Res. Sta., Ruiru, Kenya]

Within the framework of research on regulated coffee ripening, it was found that spraying with

1400 ppm 2-chloroethyl phosphonic acid (CEPA) at 12, 10 or 8 wk before natural ripening resulted in 30% fewer grade A beans, while later spraying had no effect on bean size. Early ripening did not reduce the liquoring quality of the beans. RM

101

How to brew coffee in restaurants and coffee houses.
Anon.
Indian Coffee 41 (1) 5-13 (1977) [2 ref. En]

Guidelines are given on the preparation of good quality coffee, based on work done by the Coffee Technology Unit of the Central Food Technological Research Institute, Mysore. They include suggestions on equipment cleanliness (where to look for dirt, how to clean), the grind of the coffee powder, roasting, method of brewing (main requirements for proper brewing, ratio of powder:water, water temp. and quality, extraction methods), keeping quality of the brew, quality of the milk, some common defects and their remedy, and information on nutritive value, caffeine content and composition of coffee and coffee solids. Data on some common sizes of filters, coffee making techniques, efficiency of extraction at different powder:water ratios, coffee making schedules (cost/cup), nutritive value, important constituents, and composition of roasted, soluble and brewed coffee are presented in tabular form. RM

102

Weather studies at Dandora coffee stores.
Muriithi, G. K.
Kenya Coffee 42 (490) 27-35 (1977) [2 ref. En]

The provision of a lower ceiling to seal the coffee store from natural ventilation and the use of a controlled ventilation system considerably modified the internal max. temp. but not the min. temp. The temp. range in the modified store was 15-23° C, vs. 15-29° C prior to modification (mean, 18-20° C vs. 21-26° C); RH ranged from 38 to 78%, vs. 20-95% for the unmodified store (mean, 60-70%, vs. 70-81%). The Telemax humidity sensor and the ventilation system performed satisfactorily throughout the test period. RM

103

Flavoring agent.
Winter, M.; Gautschi, F.; Flament, I.; Stoll, M.; Goldman, I. M. Firmenich & Cie
United States Patent 4 005 227 (1977) [En]

Coffee flavour is modified by the addition of a pyridine compound having 3 substituted R groups which may be hydrogen, vinyl, propenyl, methyl, ethyl, isobutyl, allyl, phenyl, or benzyl except that all 3 must not be hydrogen. IFT

104

[Viridinic acid for the detection of chlorogenic acid.] Viridinsäure zum Nachweis von Chlorogensäuren.
Wurziger, J.
Kaffee und Tee Markt 26 (19) 3-5 (1976) [3 ref. De] [Chem. & Lebensmitteluntersuchungsanstalt, Hygienisches Inst., Hamburg, Federal Republic of Germany]

The presence and properties of chlorogenic acid in ground fresh coffee beans are discussed, and its antioxidant properties demonstrated by reference to changes in the peroxide value of samples of heated lard. The formation of a green colour (viridinic acid) is shown to be due to a reaction between chlorogenic acid and traces of protein in the fresh beans. A sensitive method for detection of chlorogenic acid, based on conversion to viridinic acid in the presence of gelatin and $MgCO_3$, is proposed; the strong green coloration changes to deep red on acidification with HCl. The conditions necessary for complete extraction of chlorogenic acid from milled coffee beans are outlined, several successive treatments with small quantities of eater being required; the instability of chlorogenic acid in aqueous solutions exposed to air can also be demonstrated with the aid of the viridinic acid reaction. BDH

105

What's new in packaging?
Anon.
Food Processing Industry 46 (544) 52, 59, 62 (1977) [En]

Consideration is given to the latest developments in the application of systems and materials to the packaging of food and drink: aseptic packaging and foil alternatives; baby food sealing problem solved; 'bag-in-box' for bulk milk; new coffee jar; tops for drinks bottles; and push-in top for cans. VJG

106

7th International Colloquium on the Chemistry of Coffee. Hamburg, 9-14 June 1975. [Conference proceedings]
Association Scientifique Internationale du Cafe 571pp. (1976) [many ref. En, Fr, Es, De] 34 Rue des Renaudes, 75017 Paris, France; ASIC

Papers at the ASIC International Colloquium on Coffee Chemistry were presented at sessions dealing with physiology (pp. 27-89); chemical analysis and composition (pp. 91-321); chemistry and its relations with technology (pp. 323-388); documentation and information (pp. 389-400); and agronomy (pp. 401-566). Individual papers included: Water soluble protein and non-protein components of Brazilian green coffee beans, by H. V. Amorim & R. V. Josephson (pp. 109-114, 3 ref., En); Structure of the mascaroside bitter principle of Coffea vianneyi, by M. Hamonniere, A. Ducruix, C. Pascard-Billy & J. Poisson (pp. 201-204, 14 ref.,

Fr, en); Characteristics of some proteins and acid phosphatase from raw coffee, by W. Berndt & E. Meier-Cabell (pp. 225-232, 17 ref., De, en); Contribution to a study on the utilization of coffee pulp, by J. Zuluaga-Vasco, C. Bonilla V. & M. Quijano R. (pp. 233-242, 10 ref., Es, en); The problems with processed coffees with reference to nutritional, legal and commercial aspects, by G. Kurz (pp. 351-355, 19 ref., De, en); Design and scope of a model of the relationships between the macro-components of the coffee industry, by B. Martinez-Villalba (pp. 367-378, 38 ref., Es, en); and Recent reports on the chemistry and technology of coffee: a review, by R. F. Smith (pp. 389-400, 191 ref., En). Each paper is followed by a discussion. A further 29 papers are abstracted separately and are in the FSTA author index under Association Scientifique International du Cafe [ASIC Symposium]. [See FSTA (1976) 8 3H386 for the 6th Colloquium.] AL

107

Iron-fortified soluble coffee and method for preparing same.
Klug, S. L.; Patrizio, F. J.; Einstman, W. J.
General Foods Corp.
United States Patent 4 006 263 (1977) [En]

A liquid coffee extract obtained from a countercurrent, semi-continuous extraction process is cooled to precipitate polyhydroxyphenols and polyhydroxyphenol-polysaccharide complexes. After separation of the precipitated material, the extract is combined with a source of assimilable, elemental Fe and dried. IFT

108

[Precursors of colour and aroma formation in coffee.] Vorstufen und Entstehung von Farbe und Geschmack des Kaffees. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Baltes, W.
pp. 91-107 (1976) [44 ref. De, en] [Tech. Univ., Berlin (West)]

It is suggested that coffee aroma does not depend solely on bean var. or method of preparing the beverage; changes during roasting are also of importance. Chemical changes during roasting of green coffee are discussed in detail, including: breakdown of sucrose, an initial increase of reducing sugars being followed by their breakdown; decomposition of chlorogenic acid to quinic acid, followed by further decomposition; decomposition of caffeic acid; reduction of free amino acids and their breakdown products due to pyrolysis or Strecker degradation; hydroxymethylfurfural formation by heating of the sugars; and the glucose-alanine reaction and products of the Amadori reaction. In general, monosaccharides (even in low concn.) and amino acids are the main aroma precursors, followed to a lesser extent by chlorogenic acid. The final decomposition products include >300 volatile compounds; it is believed that the aroma compounds associated with Maillard-Strecker browning are of minor significance and that pyrolytic decompositions are the major factor, for which roasting temp. are sufficiently high. ELC

109

[Volatile components of raw coffee.] Flüchtige Inhaltsstoffe des Rohkaffees. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Vitzthum, O. G.; Werkhoff, P.; Ablanque, E.
pp. 115-123 (1976) [14 ref. De, en] [HAG AG, Bremen, Federal Republic of Germany]

Volatile components of green coffee were extracted by steam distillation, by CO_2 under pressure and above its critical temp. of 31°C (details given), with further extraction by diethyl ether, separation into neutral and basic fractions and identification of individual compounds by GLC and MS. 18 compounds not previously reported in coffee (furans, phenols, aldehydes, alcohols and pyrroles) were identified in the neutral fraction. A further 37 new compounds were identified in the basic fraction (16 not found hitherto in roasted coffee); these included pyridines, quinolines, aromatic amines, pyrazines, esters and aldehydes. The pyrazines (16 compounds) were very prominent, and it is considered that 4 methoxypyrazines are largely responsible for the aroma of raw coffee, particularly 2-methoxy-3-isobutylpyrazine, which is known to be retained after roasting. ELC

110

[Study of properties of green coffee by differential thermal analysis and mass spectrometry.] (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Quijano-Rico, M.; Bautista R., E.; Chaparro B., F.; Zamudio G., V.; Ortiz P., A.; Helden, J. von
pp. 125-131 (1976) [5 ref. Es, en] [Lab. de Investigaciones sobre la Quimica del Cafe, Bogota, Colombia]

Equipment used (described and illustrated) included a differential thermal analyser (DTA), selective ion monitoring device and a mass spectrometer. The 3 methods were used to study the volatile compounds evolved during roasting (pyrolysis) of green coffee in a current of He (100 ml/min), the coffee grains being heated from 30° to 300°C at 10°/min. All 3 methods indicated phases classed as evolution of water, 'furfural' compounds and 'pyridine' compounds, which coincided with irregularities in the DTA curves. However, variations were found in the DTA curves (including differences between portions of the same sample), according to the coffee moisture content and particularly between the Arabica and Robusta coffee var. DTA curves for Arabica coffee were generally similar to those described previously in the literature. ELC

111

[Contribution to the study of 'stinker beans' in green coffee.] (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Vincent, J.-C.; Barel, M.; Challot, F.
pp. 133-140 (1976) [5 ref. Fr, en] [IFCC, Paris, France]

A major commercial defect of coffee was traced to the presence of 'stinker' beans, which are difficult to detect in a batch by visual characteristics. Earlier work on 'stinker' beans had shown changes in the contents and ratio of ethanol:methanol in volatiles examined by gas chromatography of headspace gases, but MS was not sensitive enough for further investigations. New methods are described for improved trapping and concn. of aroma compounds drawn from ground beans, including heating under vacuum, removal of gases in a current of N_2 and trapping in 3 fractions in ice + salt, solid CO_2 and liquid N_2, plus solvent extraction of chromatographic peaks. The resulting improved gas chromatography plus MS of sound and 'stinker' beans confirmed increased ethanol in the latter, as well as additional compounds, particularly acetoin, diacetyl and acetic acid. Simultaneous field investigation showed that plantations producing poor coffee had a high incidence of 'stinker' beans (range 1-50/2000 beans, i.e. 0.05-2.5%). This was attributed to faulty storage of cherries at high temp. for several days before de-pulping, with a consequent undesirable type of fermentation. ELC

112

Overfermented coffee beans ('stinkers'). A method for their detection and elimination. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Gibson, A.; Butty, M.
pp. 141-152 (1976) [15 ref. En] [E. African Ind. Res. Organisation, Nairobi, Kenya]

Trials have demonstrated that most off-flavours are due to the presence of overfermented coffee beans ('stinkers'). These beans show a characteristic fluorescence which distinguishes them from sound clean green coffee. A commercial UV fluorescence sorting machine has been developed in cooperation with Gunson's Sortex, London, capable of removing 100% of over-fermented beans. All known off-flavours, except taints caused by external contamination, can apparently be removed by this technique. AL

113

[Use of magnetic resonance to study the effects of the moisture content of green coffee.] (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Rodriguez, L., J.; Fritsch, G.; Diaz S., J.
pp. 153-158 (1976) [5 ref. Es, en] [Univ. Nacional de Colombia, Bogota, Colombia]

Storage of green coffee beans having a high moisture content results ultimately in poor flavour in the roasted beans. Information on water movements in beans is obtainable directly from NMR measurements and indirectly from electron paramagnetic resonance (EPR), which indicates the formation or recombination of free radicals. Both methods were used to examine samples of Colombian beans containing 1.2, 3.6, 5.5, 7.5, 10.5, 14.0 or 17.5% moisture. Some samples for EPR were also irradiated for 5 h with X rays (10 krad) to induce free radical formation and improve sensitivity of measurement. Samples were stored in air, O_2 or N_2. Graphs are presented showing free radical concn. (from EPR spectra) vs. storage time for each moisture content, and NMR amplitudes vs. water content and temp. Free radical concn. decreased (i.e. water absorption increased) with storage time and rising moisture content. Results suggest a critical moisture content of 9% for green beans, above which the free radical concn. falls steeply and reaches zero after 400 h. No case was observed of increased free radical concn., and little difference was found between storage in air, O_2 or N_2. ELC

114

The interrelationship of potassium contents of green roasted and instant coffees. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Clarke, R. J.; Walker, L. J.
pp. 159-163 (1976) [5 ref. En] [General Foods Ltd., Banbury, Oxon, UK]

The K content of a considerable number of fully characterized commercial green coffees in multiple sampling were determined by flame photometry. Atomic absorption methods were also used. Variability of K content was shown to be at least $\pm 10\%$ of the average. Instant coffees prepared from these green coffees were also assessed for their K content, and related to their green yields directly determined from experimental runs. This relationship reflected the variability of K content found in the green coffees. Reasons for this variability are discussed. AS

115

[Determination of the contents of various elements in samples of different varieties of coffee.] (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Quijano-Rico, M.; Spettel, B.
pp. 165-173 (1976) [11 ref. Es, en] [Lab. de Investigaciones sobre la Quimica del Cafe, Bogota, Colombia]

Data are presented on the contents of 26 elements in green coffee beans from plants of the var. Arabica, Liberica, Canephora and Timor Hybrid grown under identical conditions. Differences between var. in relation to the incidence of groups of elements are noted. Close chemical similarities were found between the Timor Hybrid and Arabica var.; Canephora coffees have a

very high Cu content and are resistant to rust disease, while rust-susceptible Arabica strains have a low Cu content. ELC

116

[Macromolecular structures in coffee.] Makromolekulare Strukturen in Kaffee. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Thaler, H.
pp. 175-187 (1976) [17 ref. De, en] [Tech. Univ., Braunschweig, Federal Republic of Germany]

Macromolecular structures are present in green coffee and some remain in roasted coffee, coffee brew and extracts. Natural coffee contains proteins, various polysaccharides (PS) and structural protein-PS complexes. Roasted coffee still contains protein and PS fragments, plus melanoidins, and includes all the original individual amino acids except arginine; these also remain in extracts and instant coffees. No differences have been established between Arabica and Robusta var. PS in natural coffee are cellulose, mannans, galactans, arabans and xylans; except for cellulose these do not occur separately, but in various combinations, which form 4 distinct groups having different solubilities between cold and boiling water. Roasted coffee contains a soluble group, holocellulose, and a galactoaraban derived from an original protein-PS complex. PS contents of extracts vary with temp. of roasting and extraction, but tend towards equal parts of mannans and galactans only. [From En summ.] ELC

117

[Carbohydrates in instant coffee: a new method for their fractionation and quantitative determination.] (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Pictet, G. A.
pp. 189-200 (1976) [19 ref. Fr, en] [Soc. d'Assistance Tech. pour les Produits Nestle, Orbe, Switzerland]

Samples of 5 leading commercial brands of instant coffee (spray- or freeze-dried pure coffee) were subjected to a new fractionation procedure to determine the distribution of glucide components. An aqueous solution of coffee was first treated with 90% acetone, from which was obtained (i) an acetone fraction, soluble in water, comprising 29.0-37% of total DM and (ii) a water-insoluble acetone fraction, comprising 2.70-5.00% of DM. Further extraction with 70% ethanol yielded (iii) an ethanolic fraction (32.0-41.0% of DM) and finally (iv) an aqueous fraction of residues insoluble in organic solvents (22.0-31.0% of DM). Hydrolysates with 0.6N HCl were also prepared. Normal coffee analyses were made, together with examinations of fractions (i)-(iv) by colorimetric methods (reducing groups), paper chromatography, enzymic oxidation and acid degradation to furfural. Almost all the caffein was obtained in (i), with most of the chlorogenic acids (remainder in (iii)). 'Probable' protein was present mainly in (iii). Most of the free monosaccharides (galactose, arabinose) were present in (i), with some di- and trisaccharides; (ii) contained polymers of galactose, arabinose and glucose; (iii) contained the oligosaccharides (mean of 4 'monose' units, largely galactose and mannose); and (iv) had a high saccharide content composed almost wholly of polysaccharides with 15-20 'monose' units (5 monoses, 2 uronic acids). ELC

118

[New diterpenes in coffee.] Über neu gefundene Diterpene in Kaffee. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Ludwig, H.; Obermann, H.; Spiteller, G.
pp. 205-210 (1976) [7 ref. De, en] [Univ., Göttingen, Federal Republic of Germany]

During investigation of steroids in urine a diterpene compound was isolated which occurs only in the urine of coffee drinkers. Coffee beans were found to contain a glycoside of atractyligenin (AL) in the sugar residue (about 0.1% by wt. of roasted coffee). This is metabolized in the body to a new diterpene glycoside and similar compounds. AL itself depresses the mitochondrial nucleotide translocase system and is highly toxic. Chemical methods used and structural formulae of AL compounds are given. ELC

119

[Binding of aroma compounds to the matrix of coffee powder.] Bindung von Aromastoffen an die Matrix von Pulverkaffee. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Maier, H. G.
pp. 211-219 (1976) [9 ref. De, en] [Tech. Univ., Braunschweig, Federal Republic of Germany]

Aroma binding by coffee powders is known to be inferior to that of freshly ground and roasted coffee. Sorption of low bp aroma compounds was determined for various coffee preparations and for other foods (dried whole milk, dried skim-milk, potato flakes, strawberry powder, apple pectin) and food constituents (glucose, lactose, dextrin, casein, glycerides, gelatin, polysaccharides, methyl cellulose); hexane, acetone, ethanol, propanol, ethyl acetate, n-pentane, and pyridine were used as model aroma compounds. Desorption under vacuum was used to establish the extent of irreversible sorption. Short-term sorption from the vapour phase was studied by gas chromatography, long-term sorption by gravimetric methods and type of sorption by IR spectroscopy of thin films. Sorption by coffee extracts was much lower than that of original coffee, coffee oil or fat-free extraction residue; the amounts sorbed normally increased with the extraction rate. Polysaccharides are considered to be the major aroma binding agents in coffee extracts. ELC

120

[Flavour substances in coffee.] Geschmacksaktive Substanzen in Kaffee. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Belitz, H. D.
pp. 243-252 (1976) [22 ref. De, en] [Tech. Univ., Munich, Federal Republic of Germany]

A review is presented of existing knowledge of chemical compounds associated with the basic sour, salty, sweet and bitter flavours. The flavour components of roasted coffee, classed as a mixture of sour, bitter and aromatic, are believed to be derived mainly from the effects of heat on organic constituents. Constituents which possibly make up the sour fraction are listed. Bitter constituents include caffein, together with various heterocyclic compounds of pyridine and pyrrole formed by heating of trigonellin, and also various aliphatic and aromatic ketones and esters. Trigonellin itself has little direct influence on flavour. Some repression of bitterness is reported by L-aspartyl-L-phenylalanine-methyl ester in the presence of sucrose. ELC

121

The composition of the fatty acids in coffee oil and coffee wax. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Folstar, P.; Pilnik, W.; Heus, J. G. de; Plas, H. C. van der
pp. 253-258 (1976) [6 ref. En] [Lab. of Food Chem., Agric. Univ., Wageningen, Netherlands]

Composition of the fatty acids in (i) the wax of the surface layer of green coffee beans and (ii) the wax-free coffee oil was studied. (ii) contained mainly palmitic, stearic, oleic and linoleic acids; there was a higher proportion of the unsaturated acids in the triglycerides than in the diterpene esters; and, as in most vegetable oils, the unsaturated acids showed a preference for the C-2 position in the triglycerides. Unlike (ii), the triglycerides and especially the diterpene esters of (i) contain of a high % of arachidic, behenic and lignoceric acids. AL

122

Sensory analysis of coffee and coffee related products. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Roekel, J. van
pp. 259-264 (1976) [En] [DEJ Int. Res. Co. BV, Utrecht, Netherlands]

This short review describes measuring instruments normally used in sensory analysis, and surveys the leading test methods used by experts and laymen for coffee and coffee products. AL

123

Quality assurance and quality control in the coffee industry. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Lutz, G. J.
pp. 265-272 (1976) [En] [General Foods Corp., White Plains, New York, USA]

The difference between assurance and control are defined and then applied to the whole coffee industry from coffee growing to consumer. The purity and satisfaction aspects of quality are dealt with, covering the basic process, convenience processing and the delivery system. AL

124

Determination of trigonelline in coffee. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Viani, R.; Horman, I.
pp. 273-275 (1976) [11 ref. En] [Nestle Products Tech. Assistance Co. Ltd., Lausanne, Switzerland]

NMR spectra at 60 MHz of whole coffee infusions were used to follow the kinetics of the transformation of trigonellin in coffee as a function of roasting time and temp. The NMR method is rapid and simple, and relative amounts of trigonellin found were in good agreement with those determined by classical methods. AL

125

[Determination of moisture in raw coffee. Results of Federal German Standards Committee collaborative test.] Zur Bestimmung der Feuchtigkeit in Rohkaffee. Ergebnisse aus DNA-Ringversuchen. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Gabriel-Jürgens, H. O.
pp. 279-285 (1976) [De, en] [Joh. Jacobs & Co. GmbH, Bremen, Federal Republic of Germany]

Methods for detn. of the moisture content of green coffee studied by the Federal German Standards Committee are mentioned; these include successful development of a reliable vacuum drying oven. The problem with oven drying methods is that results may not wholly represent moisture, due to possible loss of other coffee constituents. A new method has been studied which involves azeotropic distillation of 5 g ground coffee with dioxan and examination of the distillate by gas chromatography or Karl Fischer titration. The first 15 ml of distillate contains 99% of the water, and 50 ml contains all the water. Dioxan is water-free and no breakdown of the coffee occurs. With gas chromatography, water gives a distinct peak, separated from dioxan or other coffee constituents. Collaborative trials gave good results, with reproducibility 0.3-0.4% between laboratories (on a total of only 1%). The method is suggested for reference checking of routine methods, e.g. drying for 3 h at 103° C or direct Karl Fischer titration of ground coffee. ELC

126

Investigations of mycotoxins relative to coffee. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Levi, C. P.; Trenk, H. L.; Yeransian, J. A.
pp. 287-294 (1976) [22 ref. En] [General Foods Corp., White Plains, New York, USA]

Analytical procedures for detection of aflatoxin B_1, ochratoxin A and sterigmatocystin in green coffee, investigation of their natural occurrence in samples of green coffee beans from various sources, and studies of experimental production of these toxins in the laboratory under controlled conditions using green coffee as substrate are described. AL

127

[Variations in the caffein content on coffee trees.] (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Charrier, A.
pp. 295-302 (1976) [18 ref. Fr, en] [Orstom, Paris, France]

Possible means of obtaining coffee beans having a low natural content of caffein (to replace 'de-caffeinated' coffee) were studied. Caffein content is determined mainly by genetic factors (8 × more important than environmental factors). Cultivated and 'wild' coffee trees in the Madagascar collection were examined. Caffein content on DM of 130 Coffea arabica strains ranged from 0.58 to 1.70%, mean 1.16%; figures for 680 C. canephora (Robusta) strains were 1.6-3.27, mean 2.15%. Some Paracoffea strains from Africa and Asia contained no caffein. Selection of low-caffein strains, e.g. < 1% for Arabica and < 2% for Robusta, could lower the content in commercial coffee by 20-25%. New genetic combinations (also with suitable cultivation characteristics) might be obtained by cross breeding Arabica × Robusta and selection from their descendants, but the genetic 'pool' might prove inadequate for sufficient variability, although such hybrids with very low caffein contents (0.2%) are available (Java and Ivory Coast). The best solution (long-term) would be to domesticate the wild caffein-free spp. of Paracoffea and Mascaprocoffea and gradually introduce them into C. arabica and C. canephora strains. ELC

128

[Determination of chlorogenic acids in coffee extract: results of Federal German Standards Committee collaborative trials.] Zur Bestimmung von Chlorogensäuren in Kaffee-Extrakt: Ergebnisse aus DNA-Ringversuchen. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Kwasny, H.
pp. 303-309 (1976) [17 ref. De, en] [HAG AG, Bremen, Federal Republic of Germany]

A standard method for detn. of total chlorogenic acids in coffee was required, with importance attached to rapidity and ease of application. Results of collaborative analyses between 8 laboratories, with a statistical analysis, are given for 2 methods selected as promising. These were: (i) the method of Lehmann [Deutsche Lebensmittel-Rundschau (1967) 63, 273] based on desorption from a polyamide column with alkaline methanol or aqueous NaCl and measurement of light absorption at 324 nm; or (ii) the Häusermann/Brandenberger method [Zeitschrift für Lebensmittel-Untersuchung und -Forschung (1961) 115, 516] based on bathochromic displacement of the absorption max. by addition of boric acid, with measurement of the difference at 357 nm in phosphate buffer at pH 7.0. A difference in reproducibility between laboratories was found; the coeff. of variation for various samples ranged from 3.4 to 10.0% for (i) and from 1.3 to 3.1% for (ii). The high error of (i) is attributed to sensitivity to slight alterations in the procedure. Method (ii), which is also rapid, is suggested for adoption. ELC

129

[Microflora of coffee: method of counting, and influence on organoleptic properties.] (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Poisson, J.; Cahagnier, B.; Multon, J. L.; Hahn, D.; Corte dos Santos, A.
pp. 311-321 (1976) [10 ref. Fr, en] [Sta. de Biochimie & Physicochimie des Cereales de l'INRA CERDIA, Massy, France]

A suspicion that poor coffee flavour 'in the cup' is associated with reduced numbers of bacteria and increased numbers of moulds in green beans stored at high temp. and RH was further investigated. A standard procedure for preparing a raw coffee suspension was found to be essential, due to wide variations in the numbers of organisms released according to dry vs. wet grinding, wt. of sample ground and duration of preliminary soaking. The procedure used was 1 h 45 min preliminary soaking of 150 g coffee in 400 ml diluent (NaCl-peptone-Tween), grinding for 1 min 45 s in a Waring blender at 12 500 rev/min, 1/5 dilution and homogenization. Repeatability of counts was bacteria 14.57% and moulds 12.24%. Green Arabica coffee was stored for 53 days at 20° C and 95% RH with either (i) atmosphere changes or (ii) stationary air. Moisture content increased overall from 12 to 25%. Numbers of bacteria declined sharply and moulds associated with poorer cup flavour increased; Aspergillus spp. predominated in (i) and Penicillium in (ii). The max. 'safe' mould count is suggested to be 10^4/g; at 10^5/g the cup flavour is beyond the point of acceptance. Flavour deterioration occurred between 16% moisture (slight) and 20% (unacceptable); flavour change may have been caused mainly by high moisture, with which increased mould growth is associated. ELC

130

[Problem of CO_2 desorption of roasted coffee from the viewpoint of development of new packaging material.] Das Problem der CO_2-Desorption von

Röstkaffee unter dem Gesichtspunkt einer neuen Packstoffentwicklung. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Radtke, R.
pp. 323-333 (1976) [4 ref. De, en] [Inst. für Lebensmitteltech. & Verpackung, Munich, Federal Republic of Germany]

Browning and aroma formation during coffee roasting are accompanied by considerable formation of CO_2, but this diffuses only slowly from whole beans, leading to excess pressure, distortion and eventual leakage of sealed plastics bags of unground coffee. Possible solutions reviewed include a special pressure release valve or CO_2-absorbing packaging material. More information is required on the volume and time-rate of CO_2 release from roasted coffee in relation to degree of roasting and subsequent fineness of grinding; results may also be different for coffee from which caffein has been extracted. An apparatus is described for measurement of CO_2 developed by normal or decaffeinated coffees, ground or unground, which will facilitate control of gas evolution by packaged coffee. ELC

131

Adsorption of carbon dioxide on roast and ground coffees. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Saleeb, F. Z.
pp. 335-339 (1976) [13 ref. En] [General Foods Corp., White Plains, New York, USA]

The adsorption of CO_2 at 194.7° K on 4 roast and ground coffee samples has been determined. The isotherms are characterized by a massive CO_2 uptake at pressures that are dependent on the type of coffee used as well as its pretreatment. The moisture level of the coffee is critical in initiating this peculiar type of adsorption. CO_2 clathrate formation and/or multilayer condensation in the coffee pore structure is discussed. Approx. pore sizes in coffees were estimated from the desorption isotherms via the Kelvin equation. A widening in pore opening is noticed on repeated adsorption-desorption cycles. AS

132

[Studies on the pulverization of agglomerated coffee extract.] Untersuchungen zum Abrieb von agglomeriertem Kaffee-Extrakt. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Sylla, K. F.; Schrein, J.
pp. 341-347 (1976) [29 ref. De, en] [HAG AG, Bremen, Federal Republic of Germany]

Methods used for agglomeration of coffee are reviewed briefly, e.g. freeze-drying, spray-drying followed by moistening-agglomeration and re-drying, spray-drying with admixture of dry and moist particles. Problems of subsequent damage to instant powders by abrasion and disintegration were investigated. A simple, inexpensive sieving apparatus is described for measurement of abrasion which gives good reproducibility and simulates possibilities of abrasion between particles, against surfaces and by impact shocks. Results are used to determine a 'rubbing off' dust coefficient. Data indicate that abrasion resistance is much influenced by the initial proportion of fine particles <0.5 mm. Examples are given of increases in dust production at stages between the instantizer, storage silo, packaging machine and final container. There were indications that for the same initial small particle content dust production increased in the order: freeze-drying, tower drying, mechanical treatment, and vortex bed drying. ELC

133

[New, rapid, economical method for separation and determination of caffein in coffee and other products.] (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Quijano-Rico, M.; Bonilla V., C.; Zuluaga V., J.
pp. 379-388 (1976) [6 ref. Es, en] [Lab. de Investigaciones sobre la Quimica del Cafe, Bogota, Colombia]

A method for detn. of caffein in coffee is described which is stated to give quantitative recovery at below µg levels in 10 min, with complete purification possible in a further 15 min. The preliminary separation involves gentle pyrohydrolysis; a finely ground sample is heated at about 200° C in an ignition tube with simultaneous passage over it of a current of air saturated with water vapour and preheated to 90° C. The vapours are condensed, and the condensed water contains the caffein with other substances. For purification, the condensate is freed from insoluble matter by filtration or by taking an aliquot free from surface fat. The aqueous solution is evaporated to dryness in the presence of MgO, and the residue is extracted with $CHCl_3$. The $CHCl_3$ extract is then evaporated to dryness and re-extracted with water. This aqueous solution contains pure caffein, which can be measured by spectrophotometry. The method is applicable to green, roasted or de-caffeinated coffees. ELC

134

[Colour reactions with Arabica, Robusta and Arabusta coffees.] Über Farbreaktionen mit Arabica-, Robusta- und Arabusta-Rohkaffees. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Wurziger, J.; Vincent, J.-C.
pp. 523-530 (1976) [5 ref. De, en] [Hygienisches Inst., Hamburg, Federal Republic of Germany]

Detn. of fat, caffein and chlorogenic acid contents are usually used to distinguish between Arabica and Robusta coffees. However, clear demarcation is not always possible and application to very small samples is difficult. A colorimetric method is described (based on detailed differences

between the respective coffee oils) which can be made quantitative and can be applied to a single bean or bean portion. Oils extracted by petroleum ether and exposed to HCl gas in a diffusion capsule following TLC develop a red colour with Robusta coffee and no colour or faint blue with Arabica; oils heated with KI and glacial acetic acid develop a green or green-blue colour with Arabica but no colour or yellow with Robusta. Arabusta hybrids are more variable in composition, with less marked colour features (rose with HCl and dull green to yellow with KI-acetic acid) but can usually be identified. ELC

135

[Germination capacity of coffee beans and commercial coffee quality.] (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Corte dos Santos, A.; Rocha Lima, A.; Mario Antonio, S.; Mexia, J. T.
pp. 533-543 (1976) [11 ref. Es, en] [Inst. do Cafe de Angola, Luanda, Angola]

Samples of Arabica and Robusta green coffees subjected to 13 different techniques of preparation (de-pulping, fermentation, temp., humidity and drying procedures, alkali treatment) were examined for % germination using the standard method and also for the quality of coffee prepared from them. Samples represented the 1970, 1971 and 1972 harvests. Normal commercial assessments were made, viz. green bean inspection, roasting characteristics and flavour 'in the cup'. Results, in the form of a statistical analysis, are presented in detail. It was shown that coffee quality deteriorated with a falling % germination of beans, and it is suggested that there is a critical min. level of germination capacity (not specified) in relation to coffee quality. ELC

136

Fluid bed drying and roasting of coffee beans. (In '7th International Colloquium on the Chemistry of Coffee' [see FSTA (1977) 9 10H1670].) [Lecture]
Sivetz, M.
pp. 359-366 (1976) [16 ref. En] [State Univ., Corvallis, Oregon 97330, USA]

Fluid bed drying and roasting of coffee beans are described, and equipment is illustrated. Heating curves plotting temp. vs. time for drying and roasting of beans of different origins and types, show the thermal bump heat release near 420° F. Thermal bumps on the curve are larger with more aromatic higher altitude grown coffee beans, small for Brazils and non-existent with Robustas. A table summarizes the differences and advantages of the fluid bed roasting system compared to conventional rotary steel cylinder systems. AL

137

Method for fixing coffee grinder gas.
Siedlecki, D. T.; Meinhold, J. F. General Foods Corp.
United States Patent 4 007 291 (1977) [En]

A gas containing coffee aroma agents is condensed as a frost by use of liquid N_2, and contacted with a liquid glyceride in a manner to form an aromatized liquid which is then combined with coffee solids. IFT

138

Method for stabilizing coffee grinder gas aroma.
Kung, J.-F. T.; Clinton, W. P.; Soukup, R. J. General Foods Corp.
United States Patent 4 008 340 (1977) [En]

Coffee aroma gases are condensed as a frost and combined with powdered ascorbic acid. The mixture is then warmed to a fluid consistency and briefly contacted with a fluorinated hydrocarbon liquid to extract green tobaccoy and phenolic notes. After separation of the liquid from the condensate, the latter is contacted with a mixed solvent solution to permit a non-polar solvent component to absorb the condensed aromatics. The resulting aqueous phase is then separated from a stabilized, aroma-containing solvent phase. IFT

139

A process for protecting organic materials.
Nestle SA
British Patent 1 458 795 (1976) [En]

Foods are protected against bacterial attack by the addition of an agent obtained by the extraction of unroasted coffee. IFT

140

Caffeine antagonism.
Zeitlin, B. R.; Pritchard, A. B.; Levenson, H. S. General Foods Corp.
United States Patent 4 007 290 (1977) [En]

Nicotinic acid or its soluble salts are added to coffee to at least partially antagonize the sleep disturbing characteristics of caffeine. IFT

141

Distribution of nitrogen in ripe fruits of coffee plants.
Vasudeva, N.; Gopal, N. H.
Indian Coffee 41 (4) 121-123 (1977) [12 ref. En] [Div. of Plant Physiol., Cent. Coffee Res. Inst., Coffee Res. Sta., 577 177, Chikmagalur District, Karnataka State, India]

The seeds of 3 var. of Coffea arabica (Kents, S795, S1934), 1 var. of C. canephora (S274, a robusta var.) and 1 var. of C. dewevrei (Excelsa) contained significantly more total N than the fruit wall, and the fruit wall contained more total N than the mucilage. Excessive N concn. in the seeds may result in the accumulation of a greater quantity of caffeine, and may also lower the quality of beverage. CFTRI

142

[Coffee and caffeine.] Kaffee und Coffein. [Book]
Eichler, O.
xix + 491pp. ISBN 3-540-07281-0 (1976) [De]
Heidelberg, Federal Republic of Germany; Springer-Verlag Price DM198; $81.20

This second, fully revised edition of this comprehensive textbook on coffee and caffeine includes the following chapters: Historical aspects, by O. Eichler (pp. 1-2); Chemistry and processing of coffee, by O. G. Vitzhum (pp. 3-64); Effects of caffeine on the central nervous system, by O. Eichler (pp. 65-102); Effects of caffeine on bodily performance, by O. Eichler (pp. 103-124); Effects of methylxanthines on the function of smooth muscle, by P. Mitznegg (pp. 125-131); Effects of caffeine on the heart and circulatory system, by O. Eichler (pp. 133-170); Effects of caffeine on the respiratory system, by O. Eichler (pp. 171-173); Effects of caffeine on the kidneys and kidney function, by G. Fülgraff (pp. 175-181); Metabolism of caffeine in individual organs, by C.-J. Estler (pp. 183-213); Effects on carbohydrate metabolism, by H. P. T. Ammon (pp. 215-225); Effects on function and metabolic activity of the pancreas, by H. P. T. Ammon (pp. 227-241); Effects of caffeine on cAMP-phosphodiesterase activity, by H. P. T. Ammon (pp. 243-254); [continued in following abstr.] AJDW

143

[Coffee and caffeine.] Kaffee und Coffein. [Book]
Eichler, O.
xix + 491pp. ISBN 3-540-07281-0 (1976) [De] Heidelberg, Federal Republic of Germany; Springer-Verlag Price DM198; $1.20

[Continued from preceding abstr.] Effects on fat metabolism, by C.-J. Estler & H. P. T. Ammon (pp. 255-280); Effects on energy metabolism and temp. regulation, by O. Strubelt (pp. 281-286); Effects on the endocrine system, by O. Strubelt (pp. 287-296); Effects on the digestive system, by E. Schmid (pp. 297-321); Metabolism of methylxanthines, by O. Eichler (pp. 323-335); Toxicity of caffeine, by O. Eichler (pp. 337-350); Mutagenic and teratogenic effects of caffeine, by O. Eichler (pp. 351-372); and Coffee and cancer, by O. Eichler (pp. 373-380). An 80-pp. bibliography and a 31-pp. subject index are included. AJDW

144

Glossary of terms relating to coffee and its products.
United Kingdom, British Standards Institution
British Standard BS 5456, 11pp. ISBN 0-580-09831-1 (1977) [En] Price £3.60 [2 Park Street, London W1A 2BS, UK]

This standard is identical with ISO 3509:1976 [see FSTA (1977) 9 5U251.] AL

145

World coffee dynamics.
Serna-Laignelet, R.
Dissertation Abstracts International, B 37 (4) 1838-1839 (1976) [En] [Georgia Inst. of Tech., Atlanta, Georgia 31207, USA]

A study was made of the behavioural characteristics of the long and intermediate cyclic movements generated by the world coffee system and an attempt made to establish conditions under which a stable coffee economy could be attained. It is suggested that long delays in the coffee production sector, the tendency to accumulate obsolete capacity and a poorly conceived supply policy are the major causes of the unstable performance of world coffee prices, output and stocks. In order to generate stable price patterns, a major change in the supply policy of coffee-producing nations is recommended; the quantity supplied should depend on the annual consumption rate not on annual exportable production. JA

146

Guide to coffee roasting.
Anon.
Indian Coffee 41 (4) 124-138 (1977) [En]

This survey reports briefly on: the grades of Indian coffee used for roasting, the moisture loss and roasting loss, roasting temp., yield, organoleptic quality after roasting, and important changes that occur during roasting. The cost of roasting, quality evaluation of raw and roasted beans and liquor, characteristics of various blends, and the keeping quality of roasted coffee beans and powder in various packs are also covered. CFTRI

147

[Determination of chlorogenic acids in green coffee beans.]
Meissner, W.; Podkowinska, H.; Walkowski, A.
Zeszyty Naukowe Akademia Ekonomiczna w Poznaniu Seria I, Prace z Zakresu Towaroznawstwa i Chemii No. 58, 71-76 (1974) [24 ref. Pl] [Akad. Ekonomiczna, Poznan, Poland]

TLC and spectrophotometry were used to separate and determine the isomers of chlorogenic acid in green coffee beans. The procedure used is described in detail, and the appropriate chromatograms and UV absorption curves are presented. Mathematical and statistical processing of the data obtained showed that the method compared well with Snell's colorimetric method and the spectrophotometric method of Häsermann & Brandenberg. Methods in general use for detn. of chlorogenic acids in vegetable material are briefly discussed. STI

148

Research and development in coffee technology at Central Food Technological Research Institute, Mysore. [Review]
Gopalakrishna Rao, N.; Natarajan, C. P.
Indian Coffee 41 (5) 164-169 (1977) [79 ref. En] [Cent. Food Tech. Res. Inst., Mysore, India]

A review of work done at CFTRI on coffee processing; packaging; storage; quality control; standards; and utilization of by-products is presented. CFTRI

149

[Studies on coffee and coffee substitutes. XIX. Relationship between the quantity of a highly polymerized galactomannan and the degree of extraction of industrially prepared coffee extracts.]
Untersuchungen an Kaffee und Kaffee-Ersatz. XIX. Abhängigkeit der Menge eines hochpolymeren Galaktomannans vom Extraktionsgrad technisch hergestellter Kaffee-Extrakte.
Ara, V.; Thaler, H.
Zeitschrift für Lebensmittel-Untersuchung und - Forschung 164 (1) 8-10 (1977) [2 ref. De, en]
[Inst. für Lebensmittelchem. der Tech. Univ. Braunschweig, Fasanenstrasse 3, D-3300 Braunschweig, Federal Republic of Germany]

Extracts of (i) Caffea arabica from Columbia and (ii) C. canephora var. robusta from Angola were made using a countercurrent commercial installation to give extract yields from (i) of 36.7, 38.0, 39.8, 43.6 or 53.2% and from (ii) of 38.8, 39.5, 45.2, 48.7 or 58.0%. Galactomannan contents of the extracts were respectively 10.9, 10.5, 10.3, 10.1 and 8.7% for (i) and 8.7, 9.2, 10.4, 11.2 and 12.0% for (ii). The differences between (i) and (ii) in galactomannan extraction is ascribed to differences in strength of binding of the compound in the cell wall. [See FSTA (1976) 8 11H2032 for part XVIII.] SKK

150

Coffee - origin and use. [Book]
Sivetz, M.
479pp. (1977) [En] 3635 N. W. Elmwood Drive, Corvallis, Oregon 97330, USA; Coffee Publications Price $55.00

This newly revised edition of the book contains the following 8 chapters: Coffee growing countries (53pp.), dealing with history, botanical var., agriculture, harvesting, benefaction, classification and grading of beans; World commerce (72pp.), dealing with exports of green coffee beans, quantities and prices through the years, export controls, exporters, steamship rates and stowage, pilferage, insurance, contracts, import brokers, trading, storage and handling of bags; Coffee consuming countries (80pp.), dealing with blending, roasting and grinding of coffee beans, packaging of coffee products in cans, jars and pouches for market; Cultural aspects (30pp.), dealing with history, coffee houses, flavour additives, dairy and non-dairy sweeteners, substitutes, liqueurs, alcoholic variations, drinking habits, modes of use, types of sales; Physiological effects (44pp.), dealing with aroma and taste senses relating to bean quality and processing effects, effects on human body, dosages, toxicity, excesses, caffeine properties, manufacture, decaffeination and roast product effects; Brewing coffee beverage (56pp.), dealing with history, water qualities and effects, beverage preparation principles, filter papers, pressure brewers, commercial urns, domestic and airline brewers, vending machines and brewing definitions; [continued in following abstr.] AL

151

Coffee- origin and use. [Book]
Sivetz, M.
479pp. (1977) [En] 3635 N. W. Elmwood Drive, Corvallis, Oregon 97330, USA; Coffee Publications Price $55.00

[Continued from preceding abstr.] Sales and marketing (41pp.); and instant coffees (86pp.), dealing with history, share of sales, yields and compositions, imports, agglomeration, freeze drying, extract treatment, freeze concn., refrigeration, equipment and processing costs, quality and tests, packaging and patents. The book contains numerous illustrations, diagrams and tables. AL

152

Instant coffee.
Unilever Ltd.
British Patent 1 465 168 (1977) [En]

The organoleptic properties of coffee are improved by treating aqueous coffee extract with peroxide in the presence of a peroxidase. IFT

153

[Determination of 5-hydroxytryptamide in coffee by high-pressure liquid chromatography.]
Bestimmung der 5-Hydroxytryptamide in Kaffee mittels Hockdruck-Flüssigkeitschromatographie.
Hunziker, H. R.; Miserez, A.
Mitteilungen aus dem Gebiete der Lebensmitteluntersuchung und Hygiene 68 (2) 267-274 (1977) [7 ref. De, fr, en]
[Eidgenössisches Gesundheitsamt, Abteilung Lebensmittelkontrolle, CH-3008 Bern, Switzerland]

5-Hydroxytryptamides from the waxy layer of green coffee beans have been separated by high-pressure liquid chromatography with the possibility of quantitative detn. With reverse-phase columns, 3 homologous 5-hydroxytryptamides can be separated. Because of minimal sample preparation, rapid detn. is possible. AS

154

[Filtration device, especially coffee filter.]
Filtereinrichtung, insbesondere Kaffeefilter.
Fandreyer, W. H. W.; Glöckner, E.
German Federal Republic Patent Application 2 543 934 (1977) [De]

The device comprises a filter insert for a filter-bag and a disc-support for them. The insert consists of a heat-resistant, water-impermeable metal foil surrounding the filter-bag (filled with powdered coffee) and possessing ≥ 1 aperture each at the top and the bottom. These apertures are closed before use of the device. The disc is formed with a funnel support for the insertion of the bottom end of the filter unit. The filter unit is disposable, and can also be used as a package for the powdered coffee. W&Co

155

Method of reducing the content of irritant substances in coffee.
Emich, P. A. W.; Emich, E. G. H. Kaffee-Veredlungs-Werk Koffeinfrei Kaffee GmbH & Co.
United States Patent 4 015 022 (1977) [En]

Reduction of hydroxytryptamides and ether soluble irritant substances in raw coffee to improve digestibility involves heating raw coffee with humidified hot air at approx. 257° F, cooling at reduced pressure to approx. 104° F, and alternating these treatments several times in succession. GL

156

Gas chromatographic determination of residual methylene chloride and trichloroethylene in decaffeinated instant and ground coffee with electrolytic conductivity and electron capture detection.
Page, B. D.; Charbonneau, C. F.
Journal of the Association of Official Analytical Chemists 60 (3) 710-715 (1977) [13 ref. En] [Health and Welfare Canada, Health Protection Branch, Food Res. Div., Tunney's Pasture, Ottawa, Ontario, Canada K1A OL2]

A method is described for the quantitative detn. of residual methylene chloride (MC) and trichloroethylene (TCE) in decaffeinated instant and ground roasted coffees. The residual solvents were isolated by a closed system vacuum distillation technique with toluene as a carrier solvent, chromatographed on Chromosorb 102, detected by both electron capture and electrolytic conductivity detectors, and quantitated by comparison with an internal standard. Average recoveries of MC from instant and ground coffees spiked at 1, 10 and 25 ppm were 100.0 (88-113), 93.2 (92-95) and 97.7% (94-102%); and for TCE, 97.2 (92-101), 96.2 (95-99) and 96.5% (92-100%), respectively. The results from both detectors are compared. At lower attenuations, levels < 1 ppm can be readily measured. The procedure developed was applied to domestic and imported coffee samples, and in this case the level and identity of TCE residues were confirmed with single ion MS monitoring. AS

157

All about coffee. [Book]
Ukers, W. H.
Ed. 2, xiv + 818pp. ISBN 0-8103-4092-5 (1976) [many ref. En] Detroit, Michigan 48226, USA; Gale Research Co. Price $35.00

This is a recently issued reprint edition of a comprehensive treatise on all aspects of coffee from its first mention in 900 by an Arabian physician through to 1935. This work, encyclopaedic in treatment, is divided into 6 major sections: Historical (pp. 1-126); Technical (pp. 129-262); Scientific (pp. 265-320); Commercial (pp. 323-534); Social (pp. 537-658); and Artistic (pp. 660-732). Within each section separate chapters deal with such topics as the introduction of coffee into Western Europe, coffee houses of old London, factory preparation of roasted coffee, pharmacology of the coffee drink, a short history of coffee advertising, world's coffee manners and customs, and coffee in relation to the fine arts. 4 appendices present a chronology of coffee, a dictionary of coffee, a coffee bibliography and a coffee thesaurus. Numerous illustrations and 27-pp. index are included. AL

158

Leguminous seed glycoproteins that interact with concanavalin A.
Gleeson, P. A.; Jermyn, M. A.
Australia Journal of Plant Physiology 4 (1) 25-37 (1977) [27 ref. En] [Div. of Protein Chem., CSIRO, Parkville, Victoria 3052, USA]

Material that interacts with concanavalin A has been purified from seed extracts of 18 spp. (16 legumes, Coffea arabica and Lolium perenne) by Con A-Sepharose chromatography. When examined by sodium dodecyl sulphate-polyacrylamide disc gel electrophoresis, many of the preparations showed a number of protein-staining components. All the preparations gave a single precipitation line against Canavalia ensiformis crude extract on gel diffusion plates. Some of the Con A-interacting preparations were shown to possess haemagglutination activity. The Arachis hypogaea preparation contains 1 major glycoprotein of mol. wt. 69 000, which was further purified and analysed. The purified glycoprotein contains 12% carbohydrate, galactose being the major sugar with minor amounts of mannose and xylose present. AS

159

[Marago natural coffee extract.]
Poland, Polski Komitet Normalizacji i Miar
Polish Standard **Polish Standard PN-76 A-94010**, 12pp. (1976) [Pl]

This standard replaces PN-67 A-94010 and covers the spray-dried aqueous extract of a mixture of different kinds of natural roasted coffee called Marago. Stipulated quality requirements (raw material, organoleptic, physical and chemical properties) include: solubility in hot water, readily soluble in 30 s; moisture, ≤ 6%; caffeine, ≥ 2.8%; ash, ≥ 10% in DM; mechanical impurities, no tolerance; As, ≤ 1 mg/kg; Pb, ≤ 2 mg/kg; Cu, ≤ 30 mg/kg; Zn, ≤ 50 mg/kg; and Sn, ≤ 200 mg/kg. Regulations on packaging (including 7.5-g laminated Al foil bags and 50-g cans for retail trade), storage (at 0-22° C and 75% RH, ≥ 6 months for bags, and ≥ 12 months for cans), transport and analysis (presented in detail) are listed. Information on main changes from PN-67 A-94010 and on documentation is given in an appendix. SKK

160

Specification for soluble coffee-chicory powder.
India, Indian Standards Institution
Indian Standard IS:3309-1975, 8pp. (1975) [En

Price RS5.00] [Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110001, India]

This standard, first revision of the 1965 standard, prescribes requirements (including moisture ≤ 3.5%; total ash 7.0-10.0% in DM; caffeine (anhydrous) ≥ 1.4% in DM), packaging and marking, and methods of sampling and testing for soluble coffee-chicory powder prepared by dehydration of an aqueous extract or mixture of aqueous extracts prepared from roasted and ground coffee and chicory. The % of coffee and chicory used shall be marked on the container. Procedure and evaluation for the cup test are given. AL

161

[Changes of phase during freeze-drying of fruit juices and other liquid products.]
Maltini, E.
Freddo 31 (1) 13-22 (1977) [6 ref. It] [Fac. di Agraria, Univ. di Milano, Milan, Italy]

The theoretical basis of changes of phase during freeze-drying of fruit juices is outlined. Aspects considered include: changes in frozen layers of binary, multiple and biological solutions; crystallization, amorphization and mixed freezing; and the 'collapse' phenomenon, illustrated with diagrams and tabulated collapse temp. during freeze-drying of various products (sugars, fruit juices, coffee extract). RM

162

Polyamines in green and roasted coffee.
Amorim, H. V.; Basso, L. C.; Crocomo, O. J.; Teixeira, A. A.
Journal of Agricultural and Food Chemistry 25 (4) 957-958 (1977) [16 ref. En] [Dep. of Chem.-Biochem, Escola Superior de Agric 'Luiz de Queiroz', Sao Paulo, Brazil]

3 polyamines, putrescine (1,4-diaminobutane), spermine (α,δ-bis(γ-aminopropylamino)butane), and spermidine (α-(γ-aminopropylamino)-δ-aminobutane), were isolated from green coffee beans and identified by TLC. During the roasting process these polyamines are degraded, probably being precursors of coffee flavour formation. However, coffee beans of the same var. and harvested in the same yr, which produced different beverage quality, showed similar polyamine content. No nitrite was detected in the green bean, which would avoid nitrosamine formation during the roasting process. AS

163

Chemistry of Brazilian green coffee and the quality of the beverage. VII. Total carbonyls, activity of polyphenol oxidase and hydroperoxides.
Amorim, H. V.; Legendre, M. G.; Amorim, V. L.; St. Angelo, A. J.; Ory, R. L.
Turrialba 26 (2) 193-195 (1976) [19 ref. En, pt] [Dep. of Chem., E.S.A. 'Luiz de Queiroz', Univ. of Sao Paulo, Piracicaba, Sao Paulo, Brazil]

Soft and Rio coffee beans were analysed for (i) total carbonyls, (ii) polyphenol oxidase activity and (iii) hydroperoxides. (i) and (ii) were higher in Soft than in Rio coffees, decreasing with length of time of storage, although the difference in (i) between Rio coffees stored for 1 and 2 yr was not statistically significant. After 2 yr storage, (iii) did not differ between Rio and Soft coffees. AS

164

Decaffeination of vegetable material.
Margolis, G.; Rushmore, D. F.; Liu, R. T. S. (Societe d'Assistance Technique pour Produits Nestle SA)
United States Patent 4 031 251 (1977) [En]

Aqueous extracts of tea or coffee are contacted with an adsorbing resin, after which the resin is leached to selectively remove caffeine from non-caffeine solubles. The caffeine-free resin is then eluted with an aqueous solvent mixture and water rinsed for reuse. IFT

165

[Coffee extract.]
Miko PVBA
Japanese Patent 5 217 108 (1977) [Ja]

Coffee extraction process employs a casing of porous material in contact with hot water. IFT

166

Grading for monsooned coffee.
India, Indian Standards Institute
Indian Standard IS:4074-1975, 5pp. (1975) [En] Price Rs5.00 [Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002, India]

This standard, 1st revision of the 1967 standard, prescribes requirements and methods of test for 5 grades of the 2 main types of monsooned coffee, Coffea arabica and C. caenophora (subvariety C. robusta Lyn.). Moisture content shall be 13-14.5%. AL

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